

A
PHYSICAL INQUIRY
INTO THE
CAUSE and CURE
OF
F E V E R S.

By GARRETT HUSSEY. M. D.

*Est animorum, ingeniorumque nostrorum naturale
quoddam quasi pabulum, contemplatio considera-
tioque naturæ.* CICERO.

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PHYSICAL INQUIRY

INTO THE

CAUSE AND CURE

FEVERS

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OF THE UNIVERSITY OF MICHIGAN.
CICERO.

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Printed for SAMUEL WATSON, (No. 2)

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MDCCLXXIX.

THE
PREFACE.

IN general, people write as they think, and act as they write; so that it is rare to find a man, wrong in theory, and right in practice. The physician, then, who wishes to succeed in the latter, should take care to establish the former upon sure principles: and that he may not be biassed, through a partiality in his own favour, he ought to appeal to the tribunal of competent judges. At all events, a benefit must arise. For if it be approved, the publication will not fail of being ser-

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viceable to others; but, if censured, it will convince the author, that he has neither reasoned nor acted properly: He must then revise and correct his errors.

WHEN the heart is to be soothed, or the senses to be engaged, short and spirited strokes are always the most successful: and in many cases, where an author omits what cannot be cast into an elegant mould, he is sure to please, even though he should not instruct. But a medical writer has no such privileges. He must adhere to the particular nature of his subject; and, at the expence of style, develop it fully. He must introduce the terms, which

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which are adapted to his profession, and which do not well incorporate with the purity of any language. In a word, he must give up the praise of elegance, and content himself with being clear.

THERE are some, who condemn all sorts of theory; and, because they cannot reduce every thing to a mathematical clearness, become sceptical in the midst of knowledge, and banish all reasoning from their writings. Others, again, attempt to fly, when, in truth, they are scarce able to creep, and become dogmatical in the very midst of ignorance. These are opposite extremes; and, surely, there is

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a middle path. We may reason upon the sensible qualities of things, without rejecting demonstration, as the former do; and establish a theory upon experience, without raising, like the latter, systems only of imagination.

It is a common remark, that a man may know a great deal of geometry, of chymistry, and physical experiments; and yet know very little of the theory, and still less of the practice, of physick. Nor is there any reason to wonder at it; since the laws which govern a living frame, are of a peculiar nature, and no way subject to our discipline and fetters. I would not, however,

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however, have it understood, that an acquaintance with these sciences is unnecessary for a physician to cultivate. On the contrary, the more he is conversant with them, the more, I am sure, he is qualified to benefit by experience, and to make useful discoveries in his profession. Whatever enlarges and strengthens the mind, communicates to the judgment a degree of philosophical solidity; an advantage, which cannot well be acquired, without an early application to academical studies.

THOUGH I have taken no small pains to preserve some order; yet I fear my materials are not disposed so, as to abide the

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test of a captious, unforgiving examination. There is a certain method, a precision in some parts, and a fulness in others, which I dare not promise a severe critic. But, I trust, an indulgent allowance will be made by those, who are accustomed to essays of this kind, and well informed of the difficulties, that stand in the way. I only ask one favour; that, independently of the whole, no part of the following dissertation should be judged of by itself.

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INTRODUCTION.

BY way of distinction, the name of Blood-vessels is given to the tubes, which convey the blood to the several parts of the frame: and the branches, which shoot from them, are called, some, Lymphatics; others, Nerves; and so on, according to the particular fluids, which they receive, and the particular uses, which they are destined to answer. The wonderful system, which is formed by an assemblage of these vessels, can never be, altogether, unravelled by any industry of ours: for the greatest part es-

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capcs

2 INTRODUCTION.

escapes the nicest inquiry of our senses; nor can even our imagination form an idea of their minuteness. This much, however, is certain, that, to constitute perfect health, it is necessary, that the small, as well as the great, should be entirely free from any kind of obstruction. And for this purpose, many a condition must concur. For instance, the vessels themselves should be in a middle state between the extreme of relaxation, and that of tension: and the different fluids, that pervade them, should not be too thick, or too thin; nor should their motion be too slow, or too rapid.

I AM satisfied, that, without any sensible detriment, some of these conditions may be, in a slight degree, wanting. For example, though some of the infinitely small vessels should not be able to perform their functions rightly, no inconvenience is perceived, because

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because the neighbouring vessels supply the deficiency. But in proportion as the embarrassment increases, the health begins to decline; and according to the situation of the affected part, the evil shows itself under different forms. Hence arises that variety of diseases, which we observe in the nerves, in the lymphatics, and in many of the excretory vessels.

THESE disorders are generally of the chronical kind; and are the more supportable, as the influence of their cause is further removed from the circle, in which the blood moves. But the scene changes, when the obstacles are suddenly multiplied, and drawn so near, as to be formed in the very cavity of the blood-vessels. The whole frame is then thrown into confusion; and life, which certainly depends upon the circulation of the blood, is more or less in danger, as the obstruc-

4 INTRODUCTION.

tions are more or less general, and obstinate.

THE resistance, which is made to a regular progression of the fluids, is in effect made to the action of the heart. When this organ, which is the main spring of animal motion, cannot fully discharge its contents, as at this time it surely cannot, it is a law, founded upon the structure of its parts, that, by way of compensation, it should be stimulated into quicker, and, until it be fairly overpowered, stronger contractions. In this exertion of the heart on one side, and the opposition it meets with on the other, in this conflict it is, that we are to find, what comprehends the generical nature of a Fever. As to the specific difference, of which I shall show hereafter an absolute necessity of our being rightly informed, I have no doubt but that it is owing to the changes, which are induced in the circulating fluids; and
which,

INTRODUCTION. 5

which, though different from one another, have one thing in common, that of disturbing the freedom of circulation.

THE only fluids, that I know of, which have no outlets, and whose office therefore it is, in a constant rotation, to move from, and to, the heart, are the globular parts of the blood, the serum, and the chyle. Not that this last is destined to make many a round; but experiments shew, that it must make some, before it be entirely divested of its original nature. It is of this fluid that the rest are formed by a wonderful mechanism of the body, particularly by that of the lungs; and though a great part of the serum gets into the lymphatics, and then assumes the name of Lymph, yet a great part rolls on continually with the Blood. Besides, after yielding such refined particles, as answer the purpose of nutrition, the lymph itself

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moves on to the heart, and being there refreshed, and fitted for the same journey as before, is again propelled forwards in company with the blood.

Now the only changes, that can be made in these fluids, so as to render them unfit for a due circulation, may, in my opinion, be reduced to three; a viscosity of the chyle; a coagulation of the serum; and a broken texture of the blood-globules. It may seem, that the two first changes bear the same signification. There is, however, a real difference. For when the chyle is viscid, all the rest of the humours must be poor and ropy: whereas when the serum is coagulated, the blood-globules have a great degree of firmness. Again, the fibres are weak and relaxed in the first case; but in the second, they are strong and elastic. Besides, the chyle, though viscid, can never be made hard; whilst
the

INTRODUCTION. 7

the serum may be coagulated so, as nearly to equal the consistency of leather.

UPON this principle, we may see the reason, why, in our language, the name of buff is given to that whitish substance, which, in some morbid cases, appears on the surface of the blood, after it is suffered, for a while, to settle in a tea-cup. That this is no other than a coagulated serum, is evident from hence, that a substance, like it, may be produced, if, at a time, when the serum has its natural degree of fluidity and colour, it be submitted to trials, capable of coagulating it. The only difference is, that the size, which we make in this manner, has not that degree of toughness, observable in that, which is made in the body. Nor should we be surprized at this; since the construction of the human frame, and the action of the organs, which compose it, ex-

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ceed by far all that art can possibly do.

If what I advance, relative to this buff-like substance, were true, it may be asked, first, why blood, taken from arteries, should not appear as fizy, as that which is taken from veins? and secondly, why the same fiziness should not abound in the lymph, so as to cause glandular swellings? To answer the first question, it is necessary to observe what passes, when boiling water is poured upon the serum; or, upon what is analogous to it, the white of an egg. A coagulation instantly ensues, and if we wish to prevent it, in a great measure, we may certainly succeed, by stirring up the mixture with a little dexterity and quickness. In doing this, we imitate what the arteries do in a superior degree by their pulsation; and where this dividing force is wanting, as in the veins it surely is, it is natural, that

INTRODUCTION. 9

that the particles of the size should have more liberty to unite together.

THE answer to the second question is no less obvious. For the orifice of the lymphatics, though wide enough to receive the finest and most fluid part of the serum, is too narrow to receive that, which is gross, or rendered, by any means, fizy. It is on this account, that, except in disorders, where the capacity of the vascular system is enlarged, or where the texture of the humours is broken, the blood never gets into the lymphatic vessels. And, indeed, to conclude, because no large glandular swellings appear, when the blood is fizy, that therefore the lymph is not at all affected, is, I think, to conclude rather too hastily: since, if we consult experience, we shall find, that the complaints, which some people have, and which they date from the time they had

10 INTRODUCTION.

had a fever, are owing to lymphatic obstructions, that remain, either because the fever had been badly treated, or that there had been but an imperfect crisis.

WITH regard to the third change, which consists in a broken texture of the blood, it differs widely from the two I have already mentioned, though not so much from the first, as from the second. For when the serum is coagulated, the blood-globules must be so too, since it is impossible to affect the one without the other. Hence it is, that, when a thick inflammatory crust appears, the crassamentum, which lies under it, has an extraordinary degree of firmness. But the case is otherwise, when the chyle is viscid. Then, indeed, the blood has much less density, than in the natural state; because the materials for making it compact and firm are wanting;

INTRODUCTION. 11

wanting; namely, a good chyle, and a sound, strong habit of body. But still it is not so divided and loose, as when its texture is broken. A proof of this is, that, in those disorders, which, as shall be seen hereafter, arise from viscid chyle, the blood never quits its own channels: whereas in those, that are owing to its dissolution, it has been often seen to break forth through different outlets. Again, when a viscidness prevails, the blood, if received in a tea-cup, separates into *serum*, and *crassamentum*; but when the texture of the blood-globules is broken, the whole remains in an uniform mass, just as if it had been dissolved by an addition of some fixed, or volatile alkali.

WHAT the fevers are, which these different changes, and their different combinations, produce, I shall examine in another place. Here, I think it

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it sufficient to remark, that when a physician is called upon, to visit a person, labouring under a fever, his first care should be, to know, which of these changes has been the efficient cause; or, if they be combined, to determine, which of them is predominant. As to the remote or occasional causes, by which I mean those that are capable of inducing these changes, they are, no doubt, though not immediately, worthy of a serious consideration. For, if they were not known, we should never be able to put a man upon his guard against a relapse: moreover, the very things, which, when used to excess, become occasional causes of a fever, are, when used with temperance, the principal supporters of health. For which reason, I shall endeavour to trace them in the following chapters,

A PHYSICAL

PHYSICAL INQUIRY

INTO THE

CAUSE and CURE

O F

F E V E R S.

PART the First. CHAPTER I.

SECT. I.

A I R.

SINCE we cannot attain a thorough knowledge of those bodies, which we not only see, but submit to the scrutiny of all our senses; much less is it possible to take a comprehensive view of the Air, which no test can render visible. But the regularity

SECT.

I.

SECT. I. larity of its effects plainly shews, that
I. it is a transparent, sonorous substance, which we can neither smell, nor taste, nor touch; that it encircles the globe of the earth; that its gravity encreases as it approaches to the center; that it is endowed with an amazing degree of elasticity; and that, tho' highly compressible, its constituent parts can never be brought to so close a contact, as to be deprived of their fluidity. This is all, I believe, we should pretend to know with any certainty. For, as to the internal configuration of this element, and the cause of its compressibility, spring, and motion, were we to account for them by the means of a subtile elastic Æther, insurmountable difficulties would still remain, as we should be still equally ignorant of the nature of æther itself. Indeed, when we advance but one step beyond the sensible qualities of things, we go out of our depth, and every

every struggle we make after, serves SECT.
I.
only to remind us of the narrow bound-
aries of our understanding. So that,
without inquiring why the air is qua-
lified to operate as an elastic fluid,
I shall only inquire, first, into its
general influence; and, secondly, what
the affections are, which its different
variations raise in the human body,
and in what manner it operates in rais-
ing them.

SECT. II.

*AIR, why requisite for the support
of life.*

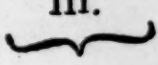
IT is requisite, for the vital moti- SECT.
II.
on of our fluids, that their com-
ponent parts should be round and
smooth, and weakly cohering together.
It is on these properties that the na-
ture of all fluidity depends: and
though the action of the heart, and
of

SECT. of the arteries contributes much to
^{II.}
maintain these properties; yet it is certain, that they are, in a great measure, owing to the strongly-repelling air, which is interwoven with the chyle, and, by this means, with the other humours of the body. An instance of this intermediate air may be seen, when the blood is put into an air-pump, and the air, that presses on it, rarified by extraction. The same effect is produced, when a cupping-glass is applied. So that, if it were possible to remove all external resistance, the internal air would expand itself with a force, equal to the weight, which it is well known to support. I mean the atmosphere, whose pressure upon a man of a moderate size, is tantamount, at least, to 30,000lb. We owe it to a just balance between these contending forces, that, far from being burst by the one, or crushed by the other, we receive
much

much benefit from the activity of both.

S E C T. III.

The same subject continued.

TO prevent a retrograde motion S E C T.
III.
of the blood, there are valves, 
planted up and down in the veins.
Therefore, when the capacity of
these vessels is lessened by the weight
of the incumbent air, the blood must
pass forward to the heart; and the mo-
tion must be then quicker, because it is
an established law, that whilst the pro-
pelling force continues the same, a
fluid should move faster in a tube of a
small, than in one of a large diame-
ter. Thus it comes to pass, that two
powers, as opposite as can possibly be
imagined, cooperate with one another
in keeping up a due circulation. This
effect, though produced in every part
C of

SECT. of the frame, is yet more manifest in
^{III.} the lungs. As the body wastes away, when these organs are embarrassed, or any way injured, and that it thrives apace, when they are well able to perform their functions, we have reason to infer, that they are the principal instruments, which are employed in converting the chyle into serum and blood, and in qualifying both for the purposes of animal oeconomy. The mechanism is, indeed, of a very complicated kind; but the main spring is the action of the air: for, by dilating the vesicles of the lungs, it unfolds the innumerable capillary arteries, which surround them; and when it is expired, these vessels, which may well be compared to a net-work, are again shrivelled so, as to form an obstacle, which nothing, but an inspiration of air, can remove. These acts are every moment attended with an alternate rising and falling of the lungs,

lungs, and, consequently, with a dilatation and contraction of their vessels; and by these means, all the humours are not only kept in motion, but pressed, and mixed, and moulded, in such a variety of ways, as to acquire the properties, necessary for their respective destinations.

S E C T. IV.

Variations of the Air.

AFTER having shown, how we are benefitted by the gravity and elastic force of the Air, I think it needless to shew, in what manner we may be injured by its levity and rarefaction. As they are opposite extremes, the knowledge of the one leads naturally to that of the other. But, since the variations, that are made in these primary qualities,

SECT. IV. receive additional force from Cold and Heat; from Moisture and Dryness; it is worth while to consider each of these associations.

SECT. V.

Of cold, dry Air.

SECT. V. **M**UCH has been said concerning the physical cause of Cold. Some look upon it, as a mere privation of Heat; whilst others consider it, as the property of certain frigorific particles. Indeed, as we have as sure a sensation of cold, as of heat, and that the effects of both preserve an uniform contrast through the whole system of nature, I think it very unphilosophical, to admit a positive cause for the one, and a negative cause for the other. But be this as it may, no doubt can be entertained concerning the influence of cold. All people

people agree, that it tends to constringe what is already solid, and to condense that which is naturally fluid. Air, itself, is condensed by it, though never to such a degree, as to be deprived of its fluidity. So that, by the united force of the impressi^on of cold, and the increase, which it makes in the gravity of the air, our bodies must be braced considerably. No persons are more sensible of so great a change, than those, who are any way consumptive. For which reason, such of them as can travel, are ordered, very properly, to spend the winter in some country, where the air is mild and temperate; where it has not too great a spring to distract their lungs, nor too great a gravity to concentrate their humours. But what is hurtful to some, is very beneficial to others. A man of a sound frame never enjoys a greater degree of activity, both in body and mind, than when the at-

SECT. ^{V.} mosphere is dry and cold. This constitution of the air, like a cold bath, increases the action of the solids, and momentum of the blood; and, by these means, enables the body to perform its functions with vigour. It must be well remembered, however, that here, as well as in all other cases, the advantage we reap, is closely allied to a very great danger. For if proper care be not taken, by the means of exercise, of warm, diluting drink, and a sufficient covering, to counteract the congealing quality of cold, it never fails to disturb the freedom of circulation; and this for two clear reasons. The first is, that by coagulating the serum and blood, it lessens their fluidity: And the second is, that by contracting the diameter of the vessels, it renders them less pervious.

SECT.

S E C T. VI.

Of cold, moist Air.

THE evil, which I have ascribed S E C T. VI. to the foregoing constitution of the air, may be, in like manner, produced by one that is cold and moist. The only difference is, that the vessels are now as much relaxed by the Moisture, as they are braced by the Cold. But still it is certain, that the serum and blood have a natural tendency to a state of coagulation, and that a cold of any kind is well qualified to forward it. Nor is this all. The moisture of cold air, like the moisture of cold linen, induces another change, no less dangerous, than common. For by obstructing the discharge of perspiration, it locks up an excrementitious matter, which operates, as a ferment, and disposes the humours

SECT. VI. mours to a state of putrefaction. So
that when a cold, moist constitution of the air prevails for a good while, we are justly to apprehend a combination of the disorders, which arise from a coagulation of the blood on one side, and from a tendency to its dissolution on the other.

SECT. VII.

Of warm, dry Air.

SECT. VII. **T**O correct the preceding injuries, there is no temperature of the air so fit, as that, which is Dry and Warm. All nature rejoices at the approach of summer, when the kindly relaxing heat of the sun dissipates the gloomy aspect of winter. But, to be serviceable, the heat should not exceed, either in degree, or in duration: otherwise, it might be extremely hurtful. There is no animal but shews evident

evident marks of uneasiness, upon be-
ing shut up for a time, where the heat
of the place equals that of its body.

SECT.
VII.

The air is then too much rarefied, and consequently too light, either to distend its lungs, or to counteract the force, with which the heat expands its humours. For which reason, we may observe, that after many, but fruitless efforts to breathe, its body swells, and putrefies. Upon the same principle it is, that the inhabitants of the torrid Zone are very subject to pestilential disorders. And if these complaints are not so common among us, it is because our climate is more temperate. As a proof of what I advance, we may remark, that, when the summer continues long dry, and scorching, the blood becomes extremely acrid, just as any animal oil, when exposed for a time to the heat of the sun, runs into a putrid, and corrosive liquor. Hence it is, that,

towards


SECT. VII. towards the end of such a season, a variety of putrid disorders prevail epidemically.

SECT. VIII.

Of warm, moist Air.

SECT.
VIII.

DURING a very warm season, it is rather desirable that there should be now and then some showers. They temper the heat; and purge the air of putrid exhalations. Moreover, the moisture, which is then taken in through the pores, gives a sort of check to an immoderate discharge of perspiration; and by mixing with the blood, it not only softens the solids, which the heat had rendered too dry, but compensates for the subtile fluids, which had been dissipated in too great an abundance. It happens unfortunately, however, that the things, which are justly deemed salutary, have
a coun-

a counterpoize of evil; and that, in SECT. VIII their excess, they all fall into it. 

Thus, by continuing too long, a warm and moist constitution of the air has been always found to be extremely noxious. To account for this, it may, perhaps, be sufficient to say, that the gravity of the air is then considerably lessened; and, therefore, that the blood can neither be properly comminuted in the lungs; nor propelled through the vessels. But there is an additional reason for the mischief. We have seen, that an excess of heat alone relaxes the solids, and corrupts the blood. We have seen also, that the same effect is produced by an excess of moisture. What then are we to expect, when the excess of both is joined? the consequence is, that the powers of body and mind become extremely languid; that no animal nor vital function can be rightly performed; and that the blood, and lymph run,
partly,

SECT. ^{VIII.} partly, into grumous concretions; and partly into a state of dissolution.

SECT. IX.

Of Infection.

SECT. ^{IX.} **I**T has been advanced by some, because the particles of Infection cannot be seen, that they do not therefore actually exist. But it is easy to perceive, that such a conclusion is not right. If we attend to the divisibility of matter, we shall be forced to own, that the extreme of littleness is no more conceivable by us, than the idea of a vast body, to which nothing can be added; and, of course, that there may be an infinite number of corporeal substances, the one still smaller than the other, of which we can have no conception. In this decreasing scale of existence, why may not the particles, not only of one, but of different

different infections be contained? It SECT.
IX.
is true, that their specifick qualities are, in many respects, inscrutable. Who can explain, for instance, why some infections should make but one attack; whilst others are known to make many? And, indeed, it is no less inconceiveable, why any one of them should propagate itself, and no other; or why some may be conveyed to a certain distance through the air; whilst others require an immediate contact for their communication. But yet there appears enough, to give us an idea, not only of the general character of those infections, to which the air serves as a vehicle, but even of the manner, in which they operate. The plague stands first in the catalogue of infectious disorders; and they who have written best upon it, have traced its origin from eastern climates, where excessive heat and moisture, joined to the nature of the soil, and the man-
ners

SECT. IX. ^{IX.}ners of the inhabitants, have promoted

a general corruption. It has been observed at all times, that contagions have been most rife, where putrefaction has mostly prevailed, as in prisons, and crowded hospitals, in besieged towns, and fields of battle, where thousands have been left to rot unburied. Hence it follows, I think, clearly, first, that what is meant by any infection, communicated through the medium of the air, is, in reality, a putrid exhalation, or, in other words, a volatile alkaline substance, the necessary product of putrefaction. Secondly, that when this offensive matter is taken in by the breath, it tends, as all alkalis do, to agitate the animal spirits; to break the texture of the blood; and to raise a putrefactive ferment, more or less violent, as it is, in itself, more or less virulent; and the person it invades, more or less disposed to receive it.

SECT.

S E C T. X.

Of fixed Air.

WHEN an acid, and an al-^{S E C T}
kali are closely united toge-^{X.}
ther, so as to form a neutral salt, they mutually rob each other of their characteristick properties. The same thing happens, whenever the integral parts of a simple element are closely combined with those of another. Hence it is, that, when fire, water, air, and earth, constitute by their union a complex body, neither of them can then retain the properties, which specify them, singly. The air, in particular, loses the compressibility, and elastic force, which distinguish it in a state of aggregation. We call it then fixed air, and the expression is very proper. But why the same name should be given to the vapour, which arises from

· S E C T. from the decomposition of any body,

X.

I confess, I know not. This vapour, far from being fixed, is volatile; and, far from being formed, only of air, is a compound of several substances. For the same force, which is sufficient to disunite the constituent parts of any body, is sufficient to dissipate, in the form of a vapour, such of them as are volatile; and not only these, but such molecules of the fixed earth, as still retain a connexion with them. Why then should a collection of several principles have a name, that is peculiar only to one of them? and why attribute to this one, what is common to them all? It is well known, that no vapours are, in every respect, similar; and that the properties, which they hold in common, are possessed by some, in a more eminent degree, than by others. So that, if fixed air, and vapour were synonymous terms, we should admit as many species of the

the former, as there are of bodies, that contain it. SECT.
X.

SECT. XI.

Whether fixed Air be the bond of union.

IT is observable, that different substances become united, when all their parts are brought into mutual contact: and also, that they remain in this state of union, until a force, superior to that of their cohesion, be used, to separate them. To account for this, the advocates of fixed air are at no loss. According to them, the air, which enters into the composition of bodies, serves as a cement, to keep all their constituent parts linked together. But, surely, as all elementary particles have a reciprocal attraction, it must be an abuse of words, to call any one of them, the cement, or bond of union. It is true, that lime, and the

D calces

SECT. calces of metals, recover their original
^{XI.}
nature, when they receive the vapour,
which arises from the decomposition of
another body. But what then? In-
deed, if calcination had deprived me-
tals and calcareous stones of nothing
else, than their elementary air: and
if the vapour, that reduces them, had
contained nothing but air; then, per-
haps, there would be some foundation
to admit the cementing quality of this
element. But neither of these suppo-
sitions is a fact. For the operation,
necessary to convert metals, and calca-
reous earths into a calx, deprives them
of other volatile principles, as well
as of air; and the vapour, which re-
duces them, contains not only air, but
the rest of what they had lost. A proof
of this is, that, of all the vapours,
used upon these occasions, there are
none so fit, as those, which are in-
flammable, and which, of course, are
replete with elementary fire, or phlo-
giston.


giston. To conclude, therefore, that SECT. XI.
air is the bond of union, because it
accompanies the loss, which is made
by calcination; and that it is an in-
gredient in the vapour, which repairs
this loss, is nothing less than a sophism,
which makes us take that for a cause,
which is only a concomitant. This is
much like the sophism of the fly, who
imagined, he raised a great dust, be-
cause he stood upon the wheel, that
really raised it.

SECT. XII.

*Of other supposed properties of fixed
Air.*

WHEN we distil sal ammoniac; SECT. XII.
and precipitate the calcare-
ous earth, which had been dissolved
in the nitrous acid, we remark, that,
according to the intermedium we em-
ploy, a difference appears in the re-

S E C T.
XII.
} fult of each process. For instance, a concrete salt arises, when the distillation is carried on, through the means of a fixed alkali: whereas, if lime be used, no concrete salt can arise; nor can the caustic spirit, which mounts in its place, effervesce with any acid. From the second operation, if you mean to obtain lime, you must precipitate with this caustic spirit; but if you wish to obtain a calcareous earth, you must precipitate with the concrete alkali. Thus far I agree with every partizan of fixed air; but in the way of explanation, I beg leave to differ. And, that I may not seem to do so, without reason, let me ask, what constitutes the essence and concrete form of any alkaline substance? Surely, not air and earth alone. For, when an alkali effervesces with acids, it excites a degree of heat, which plainly denotes the presence of elementary fire, or phlogiston: And again,

gain, the more you dry an alkali, the SECT.
XII.
more you render it incapable of any 
effervescence; which is a proof, that
a certain portion of water is one of
the elements that compose it. Now,
as the fixed alkali, which we use in
the first process, is sufficiently satu-
rated with these elements, it is plain,
that it can attract nothing else, than
the acid of the sal ammoniac: so
that the volatile alkali, which is then
set loose, must retain the whole of
its own parts; which is the reason
that it ascends in a concrete form,
and effervesces with acids. But lime,
which is far from being replete with
the same elements, greedily attracts a
portion of them all, as well as the
acid of the sal ammoniac: so that,
when disengaged, the volatile alkali
must be, in a great measure, stripped
of its integral parts; for which rea-
son, it can neither effervesce with
acids, nor be obtained in any other
D 3 form,

SECT. form, than that of a caustic spirit.

^{XII}
}

However, it has still a power to dispossess calcareous earth, and to unite with the nitrous acid. But, as it has neither water, nor air, nor phlogiston to lose; so the calcareous earth, which had been, at the time of its dissolution, deprived of these principles, is forced to subside in the form of pure lime: whereas, when we precipitate with a concrete alkali, whether fixed, or volatile, a double union takes place. That is, the nitrous acid quits its basis, to unite with the concrete alkali; and this, in its turn, quits a portion of its water, its air, and its phlogiston; all which unite with the former basis of the acid, and precipitate it, in the form of a true calcareous earth. I know very well, that these differences have been explained on the principle of fixed air alone, and that they have been looked upon, as decisive proofs of its singular properties. But, since
it

it is not, singly, by the loss of air, S E C T.
XII.
that either calcareous earth can be converted into lime, or a concrete alkali into a caustic spirit, how is it possible, that the regaining of this single element could reduce these substances to their original nature? I appeal to every unbiassed judge,

S E C T. XIII.

Whether or no fixed Air be an Anti-septic.

AS bodies in the mineral kingdom recover their primitive form, when they receive the volatile principles, which they had lost during their decomposition, it has occurred to some, that, in similar circumstances, the same change would be wrought in the animal and vegetable substances, which are decomposed by putrefaction. To try, if there really be

S E C T.
XIII.

SECT. an analogy of this sort, a train of experiments has been made; and, upon a partial view, it may seem, that the event has not been unfavourable. But, let it be admitted, that the analogy is perfect, what can we draw from thence in favour of fixed air? We have seen already, that this element is not at all, or but very little, concerned in the reduction of metals, and of calcareous earth: and, surely, it must be as little so, in the sweetening of animal and vegetable substances. For, though this change may be produced by some vapours, yet others have the power of producing quite a contrary effect, as every one will be convinced, who leaves a piece of fresh meat exposed to the corrupted steam, which comes from any body in an actual state of putrefaction. To what, then, shall we ascribe these opposite effects? Is it to the elementary air, which all vapours hold in common?
or

or to the other principles, in which SECT. XIII. they differ? There is no room to hesitate; and he will be confirmed in his opinion, who considers, that the substances, which afford an antiseptic vapour, are antiseptic themselves in a superlative degree. Such are mineral acids, and the products of fermentation, tartar, vinegar, and spirits of wine. It may be said, perhaps, that antiseptic vapours do not inebriate, nor alter the colour of vegetable juices; and, therefore, that they contain no portion of either spirit or acid. If any one makes this objection, I shall refer him, for an answer, first, to what passes, when a man incautiously exposes himself in a cellar to the vapour of a vinous fermentation; and, secondly, to the tartish astringent taste, which is imparted to water, by the vapour of an effervescing mixture. As for other substances, which are acknowledged to be powerful antiseptics, and which, nevertheless,

SECT. XIII. theless, are neither acid, nor spirituous, I shall shew hereafter, upon what principle they operate. At present, I shall only observe, that if the bark were antiseptic, merely because it contains fixed air, then every body in nature, that contains an equal portion of this element, and is no less disposed to yield it, would be antiseptic in an equal degree. This seems to me to be a fair conclusion. And yet, if it were to regulate our practice, I fear we should have no reason to plume ourselves upon the discovery of fixed air: as the salt beef, which causes a putrid scurvy, would be then given, as an excellent remedy to cure it.

CHAP.

CHAPTER II.

SECT. I.

Food.

NEXT to air, the thing we stand most in need of, is Food. SECT.
I.
For the motion, which is necessary to the support of life, dissipates a part, not only of our fluids; but even of our solids; and, if an adequate reparation were not made, it is an unavoidable consequence, that the whole frame should soon decay. But, as the most nutritive aliment is of no avail, and may be rather hurtful, unless it be rightly prepared in the stomach and intestines, it behoves us much to know, in what this preparation consists.

SECT.

S E C T. II.

*Digestion*S E C T.
II.

I KNOW of no physiological point, upon which people differ so widely, as on the subject of digestion. Having observed, how readily an alimentary mixture ferments in a warm place, men of great parts have transferred their ideas to what passes in the stomach; and revived the doctrine of alimentary fermentation. The partizans of fixed air have gone still further. As their favourite element, *the grand corrector of putrefaction*, could not be set loose, without an intestine motion, it was necessary for them to insist, that both food and medicines fermented in the stomach; and that there is no other way of obtaining a good chyle. But, in framing this opinion, I am apprehensive,

henfive, that experience has not been SECT.
II.
sufficiently consulted. For, upon that principle, we should digest well, when the stomach is sick, when the liver, the pancreas, and falival glands are greatly obstructed: and yet our own feelings prove the contrary. Nor have we then so much as a craving for food, which would be very singular, indeed, if nothing more, than heat and moisture, were sufficient to digest it.

SECT. III.

True cause of Digestion.

MOREOVER, if fermenta- SECT.
III.
tion had any share in the progress of digestion, the nature of the produce would necessarily partake of it. The chyle should then be vinous, or acetous, or putrid. But, on trial, it is found quite otherwise; and to differ in nothing from a smooth, oily,

SECT. ^{III.} oily, mucilaginous substance. Which shews, that it is composed, partly, of the nutritive juices, which pre-existed in the aliment, and, partly, of the menstruum, which is employed to extract them. Before a resin can be chymically obtained, the body, that contains it, must be sliced and pounded; it must then be mixed with a proper dissolvent, placed in a convenient vessel; exposed to a certain degree of heat; and shaken from time to time. I could not wish for a better example, to point out the true cause of digestion. And the analogy will appear exact, when we come to consider, that chewing is tantamount to pounding; that the saliva, the bile, the gastrick, and pancreatick juices, are real dissolvents; that where the aliment is contained, is a proper vessel; that the human body supplies the requisite heat; and that the action of the stomach, and of the abdominal muscles, the rising

ring and falling of the diaphragm, the SECT. III. pulsation of the large neighbouring blood vessels, together with a gentle exercise, are sufficient to produce the necessary degree of agitation. By the peristaltick motion of the guts, the fibrous, or feculent part of the food, is made to slide towards the rectum, where it acquires acrimony enough to solicit a discharge. But the extract is taken up, by a number of little absorbent vessels, planted thick along the intestinal tube; and, after being incorporated with the lymph, which it meets at different stages of its progress, it is poured at last into the mass of all our humours. Here, as the chyle is yet too crude to answer all the purposes of its destination, a second digestion becomes necessary. In this too, some useless parts must be expelled; and the rest fitted, some to form blood, others to form lymph: some to renew animal spirits, and others, again, to repair

SECT. III. repair the losses of our solids. And shall fermentation model the chyle into a variety of forms, agreeable to this great variety of ends? Whilst nature is able to do her own business, our sensations are rather pleasing. At least, we feel no tumult, no uneasiness. And will you produce such harmony, by throwing the humours into a fermentatory motion?

SECT. IV.

Fermentation, the concomitant of Indigestion.

SECT. IV. I DO not, however, mean totally to exclude Fermentation. On the contrary, I doubt not, that it takes place, whenever the digestive powers are unable to discharge any part of their respective offices. What confirms me in this opinion, is, that the

the appearances, which attend a complete indigestion, correspond exactly with those, which we discover, when an alimentary mixture is inclosed, with a sufficient quantity of water, in a common bladder, slightly stopped, and exposed to a moderate degree of heat. In both cases, we perceive the same intestine motion; the same expansion of the aliment; the same buoying up of its grosser parts; and, what is still more decisive, the very liquor, which results from an alimentary fermentation, carried on before our eyes, is formed in the stomach, by the means of indigestion. Of this we need no other proof, than the disagreeable eructations, which are but too frequent at that time. It cannot, therefore, be any thing less, than a palpable mistake, to ascribe the cause of a good digestion to a fermentatory process, which never exists, but when there is an indigestion.

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S E C T.

S E C T. V.

*Digestion and fermentation compared.*S E C T.
V.

BEFORE I conclude this subject, it may not be improper to compare the principal effects of Digestion, with those, which are produced by Fermentation; as we may discover, by making a contrast, what might otherwise pass by unnoticed. Whilst a good Digestion is going on, all the organs of the body are relieved from the languid state, they had been in before: but during the time of fermentation, a damp is thrown upon a man's spirits; at every moment he feels an uneasy load; and is scarce able to move under it. Digestion does not create any considerable distension of the stomach; nor is it attended with flatulency, or eructations: Whereas fermentation distends the stomach very

very much; and generates air; which rises to the mouth, sometimes alone; and sometimes forcing a part of the aliment to ascend along with it. Digestion prepares the food for a passage into the intestines; and for yielding a good chyle: Fermentation, on the other hand, causes the most part of the food to be thrown up; and, as a substitute for chyle, it produces a store of sour and putrid ferments, which vellicate the stomach, and intestines; and, if not timely corrected, induce an acrimony in all the humours. They are, indeed, operations of a very different nature, the one being founded on a due exertion of the mechanical powers of our frame: and the other taking place, when these powers are exhausted. This I take to be a distinction, which should never be forgotten by those, whose profession requires, that they should keep the first in proper order; and always guard against the

SECT. ^{V.} baneful influence of the second. If
ever Digestion and Fermentation are
found united, and in the following
section, I mean to allow, that they
sometimes are, does this prove, that
they are not contradictory? The hu-
man body is often, and, perhaps, it
is, for the most part, in a state of nei-
ther rude health, nor absolute sickness,
which we may justly call a state of me-
diocrity. In this mixed condition, if
the natural functions be performed
without any considerable impediment,
shall we therefore say, that health
and sickness are exactly the same; and
that a mutual dependence of one on
the other is necessary for the discharge
of these functions?

S E C T.

S E C T. VI.

Digestion and Fermentation further considered.

WE have already seen, that, for S E C T.
VI.
the perfection of chyle, a due exercise of our digestive powers is requisite : and, on the other hand, that our food runs into a fermentative motion, when these powers are, by any means, rendered unoperative. But every day's experience shews us, that there is a number of intermediate degrees, which approach more or less, to either of these extremes; and from what has been already remarked, it will, I hope, appear no less certain, that, as they recede from the one, and draw near to the other, digestion is, in that proportion, impaired; and the aliment subject to ferment. It might

SECT. VI. be no less curious, than instructive, to describe each of these degrees; but a detail could not be given, without repeating illustrations of the same nature; and repetitions are always sure to disgust. Besides, as in the various combinations of black and white, the eye can discover, which colour is predominant, so a true idea of digestion, and of its opposite, fermentation, will point out to a skilful observer, which of them prevails, when they are both united. I cannot, however, but mention, what, I am sure, deserves particular notice; that, when these two operations are blended together, the chyle, which is then formed, is neither sour, nor putrid, because it is not, altogether, the produce of fermentation; nor fit enough to nourish the body, because it is not, entirely, produced by digestion. I call it a viscid, ropy chyle, and I shall shew hereafter, that it is of a very morbid nature.

SECT.

S E C T. VII.

Conclusion.

AS it should be a man's intention, S E C T. VII.
to oppose every degree of fermentation, and, by that means, to strengthen digestion; he ought to avoid such aliments, as are the fittest to relax the stomach; and to run into a fermentative motion. In this class, we may rank all fat and oily substances. These smooth bodies, when applied outwardly, relax even the skin; and are, therefore, used to soften hard swellings, and to allay pain, which arises from a tension, or pulling of the fibres. Fish and green vegetables, though not quite so relaxing, are very apt to ferment, and are, for this reason, when taken freely, always offensive to weak stomachs. As for the aliments, which are naturally tough,
we

SECT. VII. we cannot expect them to be readily subdued; and the juices of salt meats, like those of highly seasoned dishes, convey an acrimony to the blood; and produce much the same effect, as if they had been really putrid. I know, indeed, that people of a strong constitution, particularly those, who are obliged to go through hard labour, can digest any thing, in a due quantity; and therefore it is that their appetite is too keen, to suffer their taste to be delicate. But the sedentary, and studious; the tender, and valetudinary; all such persons should be particularly nice in the food they take: and I know of no sort better, than what is neither soft enough to weaken, nor hard enough to elude the force of the stomach. Such are fresh tender meats, and stale, well baked bread. The union of these substances is by so much the more eligible, as the acrescent quality of the one, counteracts the alkallescent

lescent disposition of the other. So that SECT. VII.
the chyle, which is then formed, can
have nothing crude, or viscid, or pun-
gent; and may, therefore, be easily
assimilated to the rest of our humours.
As to the exact quantity, that should
be taken, of these aliments, I do not
think, that we stand in need of scale
and weights to ascertain it. Every
one carries about him a faithful mo-
nitor, a natural instinct; and he who
will not measure his meals by this
standard, must eat less, or exercise
more; or take physick, or be sick.

SECT. VIII.

Of Drink.

THOUGH we receive little or SECT. VIII.
no nourishment from drink,
merely, as such; yet there is no room
to doubt, that it contributes much to
the support of health. For, without
it,

SECT. VIII. it, no solid food could be rightly disposed to yield its nutritive juices; nor could the chyle have fluidity, and motion enough to pervade the capillary vessels of the frame. Besides, nothing but drink can serve, as a vehicle, for the discharge of any substance, that might, if long retained, become noxious. And hence it is, that when nature stands much in need of it, we are tormented with thirst, a sensation no less irresistible, than that, which points out the necessity of food. But, salutary as a moderate quantity may be, an excess is always hurtful; and the injury varies, according to the nature of the drink; and the degree and frequency of the excesses. Thus, water alone, when drunk too much, relaxes the stomach, and weakens the digestive fluids. And, indeed, though the chyle should have no other fault, than that of being too much diluted, this alone would be sufficient to render

der it unfit for nutrition, as it must SECT.
VIII.
then pass, in too great an abundance, through the different excretory outlets; or else, if kept in the body, occasion at length a leucophlegmatick habit. These evils, however, and the secondary ones, which flow from them, are but slight, when compared with such, as are produced by an excess of spirituous liquors. For it is the nature of every intoxicating drink, to crisp up the fibres, and to coagulate the serum and blood, at the same time; that it renders the circulation extremely rapid: than which nothing can be more capable of causing a variety of dangerous obstructions. Nor is this the only mischief. By destroying the tone of the stomach, and otherwise impairing digestion, an immoderate use of spirits gives rise to the formation of acrid chyle; and to this, as well as to the effect of a previous accumulation of bad humours, we may ascribe

SECT. ^{VIII.} ascribe the acrimony, which prevails
in all great drinkers; and which in
its turn, never fails to produce a train
of disorders. Not to particularize any,
we may justly conclude, that there is
scarce a complaint, which may not be
owing to an abuse of this sort; and,
therefore, it were greatly to be wish-
ed, that we had, in common, the same
measure to guard against it. But it is
impossible to draw such an exact line.
For the force of habit and constitution
varies so much in various people, that
what is temperance in one man, is ex-
cess in another. So that, to know
the precise quantity of drink, which
nature requires, every individual
ought to attend to his feelings;
and, in his own forum, to judge with-
out appeal.

CHAP.

CHAPTER III.

On Exercise and Inaction.

SECT. I.

Exercise.

THE necessity of bodily exercise, SECT. I. and the benefit, arising from a well regulated use of it, are sufficiently obvious. For, unless they were rouzed, and worked to a proper degree, the coarse muscular fibres of our frame could not have a tone, vigorous enough to propel the humours in their respective channels; nor to give them the fluidity, and configuration of parts, which are necessary for their respective functions. But still no mode of exercise should be continued too long; nor carried to violence at any one time.

SECT. time. Otherwise, the consequence
I. may prove fatal: Since, by an over exertion of the contracting powers of the muscles, some slender vessels may burst; or the blood may be forced into the lymphatics; or the fibres, themselves, may lose the power of their oscillatory motion; a thing very common, when they are stretched beyond their natural tone. But the evil, which follows most frequently from an excess of labour, is a coagulation of the lymph; and this, because the thinnest fluids are dissipated; and that to allay their heat, people imprudently expose themselves to a sudden impression of cold. Moreover, if the perspirable matter be suddenly stopped, which is then usually the case, it is almost as fit to dissolve the humours, as the sudden introduction of cold is, to coagulate them.

S E C T.

S E C T. II.

Inaction.

EVERY one knows, how necessary S E C T. II.
it is to enjoy rest at certain intervals. But, as it is flattering to indolence, we may be tempted to enjoy it too long; and then it cannot but be productive of many inconveniencies. In the foregoing Section it was observed, that too great an action of the fibres dissipates the thinnest fluids; and that the gross particles, which remain, are pressed together, so as to be moulded into a very dense blood. Here, because the action is too weak, the effect must be quite the contrary. Those, in reality, who remain long in an inactive state, have a great quantity of serum; but very little blood; and this too of a very loose texture. We say commonly, that such persons
are

SECT. ^{II.} are of a cold phlegmatick constitution, and the expression is very proper. For, that which creates heat in the human frame, is wanting in them; a certain momentum of the blood; and an adequate reaction of the vessels upon it. By a collision of this sort, even the coldest bodies grow warm; and, when it fails, to a certain degree, in a living body, the event is always uniform. That is, the circulation becomes languid, and the humours follow their natural tendency, corrupting in some places, and running into morbid concretions in others.

CHAPTER IV.

On Sleep and Watchfulness.

S E C T. I.

Sleep.

WHILST we are awake, the S E C T. I. objects, that play upon the organs of our senses, keep the fibres in a certain degree of tension. The operations of the mind do the same; and whether we exercise or not, there must be some muscular contraction; as, without it, the body could neither move, nor remain quiet in any one posture. Now, that a waste should be committed by these means, is very obvious; but it is not so clear, that a reparation can be then made. On the
F contrary,

SECT. I. ^{I.} **W** contrary, we may easily conceive, that the very action, which forces off a particle, already fixed, must prevent the application of a new one. And hence it is, that to nourish the different parts of the body, it is necessary, that they should be relaxed so, as to make no resistance; and that the force, which conveys, and applies nourishment to them, should be, at the same time, rather increased. Now a mechanism of this sort never takes place, but while we are asleep; nor can a store of animal spirits be laid up at any other time.

SECT. II.

Why too much Sleep is hurtful.

SECT. II. ^{II.} **W**

AFTER a sleep of seven or eight hours, the sensory is replenished with the nervous fluid, which had been secreted in the cortical part of the

the brain, and refined and perfected in SECT. II. the medullary substance. We awake then, because this secretion, like all the rest, stimulates the organs, which are appropriated to its discharge; and wants only the concurrence of our will, to force its way into its excretory ducts, the nerves. But if, instead of expediting, we strive to retard its motion, and still to sleep on, or rather to soak in bed, our feelings alone may apprise us of the consequence. Far from being refreshed, or in a proper condition, to resume, with vigour, our usual occupations, we find ourselves heavy, and languid. There is, indeed, a good reason for it. A restraint upon any secretion weakens the tone, not only of the parts, which contain it, but even of those, which are concerned in preparing it; nor is the injury ever so great, as where the organs are, naturally, most tender. Besides, the heat of a bed, like that of a warm bath,

F 2

relaxes

SECT. ^{II.} relaxes the body very much: So that, by indulging the habit of staying too long in it, a man exposes himself to the evils, which have been said to follow from inaction.

SECT. III.

Of Watchfulness.

SECT. ^{III.} **A**S the preservation of health depends, in a great measure, upon a periodical succession of Sleep and Watchfulness, it happens fortunately, that a due time is appointed for the enjoyment of both. After being, from fourteen to sixteen hours, awake, we feel a natural propensity to sleep; and, as soon as we lay up a store of animal spirits, sufficient to invigorate our frame, that is, after having slept about eight hours, we awake again. But this order, though established by nature, is liable to be disturbed

turbed by a variety of accidents. When SECT.
III.
the senses are, for a length of time, }
affected strongly in any one manner,
they cannot readily be made to change
their tenour, nor, of course, to fall
into the state of relaxation, which is
the mechanical cause of Sleep. This
is the reason, why people spend many
a restless hour, who are under the in-
fluence of either bodily pain, or some
strong emotion of mind. Now, though
it be possible, that, from a casual en-
croachment on the time of sleep, no
apparent inconvenience may arise,
yet it does not at all follow, that
transgressions of this sort may be
committed often with impunity. On
the contrary, as an excess of Watch-
fulness dissipates the nervous fluid, and
prevents the formation of a fresh supply,
it must necessarily reduce the solids
into a languid state. For which rea-
son, and partly because the humours
are, at the same time, deprived of

SECT. their thinnest particles, the circulation
III. cannot but be embarrassed considerably. A proof of this may be drawn from the swelling, which appears frequently in those, who spend whole days and nights in some constant occupation. And, indeed, as every animal function must be then disturbed, it can be no wonder, that the humours should become so acrid, as to run, at last, into a state of dissolution.

CHAP.

CHAPTER V.

SECT. I.

Of our Evacuations, and their Obstructions.

THOUGH it be true, that for SECT. I. some time after meals, an healthy man carries about him an additional weight, it is yet no less so, that the work of digestion is no sooner finished, than he recovers his former standard. Which shows plainly, that his evacuations bear a just proportion to the quantity he had taken of meat and drink; and, indeed, it is happy, that there is such an even balance between them. For, if we were, every day, to gain more, than we lose, or to lose more, than we gain, it is evident, that, in the first case, we should grow

SECT. I. to an enormous size; and that, in the
I. second, we should be reduced so, as,
in a short time, to sink into a state of
inanition.

SECT. II.

Expulsion of the Feces.

SECT. II. H WE can readily conceive, that
this equipoize could not be
maintained, if our food were to pass
off suddenly, or if, after being drain-
ed of its nutritive juices, it were to
remain too long within the confines
of the intestines. Indeed, as long as
the digestion is good, these inconveni-
encies are not at all to be apprehend-
ed. But we never fail to discover
them, when a fermentative motion
takes place in the stomach, or intes-
tines; or when the digestive powers,
though strong enough to prevent a
fermentation, are yet weak enough to
suffer

suffer the alimentary mixture to stay S E C T.
too long a time before the mouths of II.
the lacteals. For the ferments, which
are created in the first instance, operate on the principle of purgative medicines: whereas the viscid juice, which is formed in the second, is usually attended with a contrary effect. As I have dwelt upon this subject in a preceding chapter, I shall now only remark, first, that it is a wrong practice, to stop suddenly the discharge of these acrid ferments, since they must then not only irritate the bowels still more, but pass, in a much greater abundance, to the blood; and, secondly, that it is no less improper to have recourse to purgative medicines, when the intestinal tube is lined with viscid, slimy juices. For nothing favours the generation of such substances more, than a slow, weak digestion; and certainly, it is not by purging, that we can ever expect to strengthen.

S E C T.

S E C T. III.

*Of Urine.*S E C T.
III.

NOR is the expulsion of the gross Feces alone sufficient. It is still necessary, that the blood should be freed from a variety of incumbrances. Not to mention here the impurities, which are caused by sickness, or excess of any sort, we all know, that there are several others, which are the unavoidable consequences of even the best state of health. For the very motion, which is the spring of life, wears off an infinite number of particles, which, if long retained, become noxious; and the heat of the human body exalts animal salts and oils, and renders them, unless speedily removed, extremely pungent. Besides, as it is the finest part of the

the chyle, that can be modified so, as to SECT.
III.
answer the purposes of animal oeconomy, it follows, that all the rest must be separated, as a feculent matter. And if this be really the case, even when the digestion is good, what must we expect, when the food is ill chosen; or when, instead of being at all digested, it runs into a fermentative motion? The discharge of Urine is, indeed, one of the means, which nature employs, to carry off these excrementitious substances. But it happens frequently, that they cannot be sufficiently secreted in the kidneys; and whatever the cause of such a defect may be, this at least is certain, that unless this urinous matter be timely expelled through some other outlet, it will acquire such a degree of acrimony, as to corrode the vessels, and break the texture of the blood.

SECT.

S E C T. IV.

*Of Perspiration.*S E C T.
IV.

IF, on a clear summer's day, a man stands with his face, close to a white-washed wall, and exposes his head shaved, and uncovered, to the heat of the sun, he may observe the shadow of an ascending vapour. The steam of boiling water is not unlike what we breathe immediately after we come from a warm room into the cold air. A sort of moisture appears on the surface of a polished glass, when we breathe against it, or rub it with a warm hand. To these appearances, and to many others of the same kind, if we add the discoveries, that have been made by the contrivance of a statical chair, no doubt can remain, concerning the reality of perspiration. In general, this discharge is insensible; and

and to keep it so, certain conditions SECT. IV. are requisite. Otherwise, it becomes sensible enough; and then it is distinguished by the name of sweat. But, though these evacuations be different in appearance, we must not think, as some do, that they are so in reality. For the miliary glands, which are the only organs, that secrete them, are all of the same texture; and, moreover, the very means, which are, by general consent, deemed fit to promote perspiration, are also fit, when carried to violence, to bring on a sweat. Since, then, the one is only an increase of the other, and that the constituent particles of sweat, as we learn from a variety of experiments, are similar to those of urine, it follows, that perspiration is composed of the same parts, namely, water, salt, oil and earth. The only difference is, that such of these ingredients, as go off through the urinary passages, appear in the form of a fluid

S E C T. IV.

*Of Perspiration.*S E C T.
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a fluid

SECT. ^{IV.} a fluid, gross enough to be perceived by the naked eye; whereas, to be fitted for the pores of the skin, they must be subtilized by the action of the body so, as to pass off, by an imperceptible exhalation.

SECT. V.

Why a sudden suppression of perspiration is hurtful.

SECT. ^{V.} **T**HOUGH it must be allowed, that an uninterrupted discharge of the perspirable matter contributes very much to the preservation of health, yet I do not judge it to follow, that the more a man perspires, the more healthy he should be. On the contrary, we observe in winter, when the exhalations, both from the skin and lungs, are a great deal less, that people in general are more vigorous and active. The body is disposed by flow, and insensible

insensible degrees, to turn the defect SECT.
another way; and to compensate for ^{V.}
it, by the increase of other evacuati-
ons. So that we may lay it down
as a rule, that when there is only a
decrease of perspiration, and this too,
a gradual one, no shock at all can be
given. But the case is very different,
when a considerable quantity is sup-
pressed all at once. For then the or-
gans may be embarrassed so, as to be
no longer able to display either their
oscillatory, or absorbent powers; and,
in such a circumstance, it is plain,
that the suppressed matter cannot be
conveyed to other outlets. Now, as
it is composed of very corruptible in-
gredients, we need not be at a loss to
know, what effects should be produ-
ced by its retention. Considered
merely according to its own nature, it
cannot but raise a putrefactive ferment
in the humours; nor is it possible for
it to operate upon any other prin-
ciple.

SECT. ^{V.} **CIPLE.** But we must not forget, that extreme cold, which is the usual cause of the suppression, may coagulate the serum and blood, at the same time, that the retained matter of perspiration dissolves them.

CHAP.

CHAPTER VI.

SECT. I.

On the Passions.

THE medullary substance, or that SECT. I.
part of the brain, from which
the nerves take their origin, is called
the common sensory, and it is so called,
because it is found to be the region of
all our sensations. For if, by any means,
the nerves be hindered from conveying
thither the impressions, which they receive
from external objects, no sensation can be
raised, how strongly soever its cause should
be in action. Thus, though a leg, or an arm,
be exposed to an intense degree of cold, or
heat, a strong ligature shall prevent the
sensation of either. Just as a defect, that
is born with a man in his optick nerves,
shall hinder him from

SECT. I. from having any idea of colours. It
I. can be no exception to this, that some
men, though born blind, have been
able to reason well about visual ob-
jects. For, what they knew, they
learned from the relation of their other
senses. They have heard, and retain-
ed the discoveries, that have been
made by other people; but it will not,
I believe, be contended for, that they
have been ever able to make any of
their own. So that, for the formati-
on of ideas, it is requisite, not only
that the nerves should be entire, and
void of all embarrassment; but that
they should also have a free commu-
nication with their original. Nor is
this all. The brain itself must be dis-
posed in a certain manner to receive
what the nerves transmit to it. O-
therwise, no impression can be made.
As an opiate, or spirituous liquor shall
abate the violence even of torture;
and this, by inducing an extraordinary
disposition

disposition in the sensory. Now, as I. **SECT.** this organ, though composed of the same parts in all individuals, is yet no less diversified, than their countenance, it can be no wonder, that the effects produced should be in like manner different. Hence arises that prodigious variety, which is discovered in the affections of mankind: at least it is impossible to account for it in any other way. But notwithstanding this difference, it is certain, that in their leading passions, as well as in their outward form, all men have something in common. Love, grief, fear, joy, pleasure, dislike, these and a numerous train of other passions have all, in their turn, affected every mind; and we owe it to the bounty of providence, that they should: as without them, we should all fall short of the attainable perfections of our nature. Happy is the man, who knows how to govern their motions, so as to hinder

SECT. I. them from ever acting the tyrant, or
 being unrestrained by the curb of reason!

SECT. II.

How the body is affected by various Passions.

SECT. II.

AS we cannot find out the mode, in which both body and mind are united, we must, I believe, despair of ever being able to explain, why an impression, made upon any of our senses, should excite a distinct passion in the mind; or why any distinct passion of the mind should, in its turn, produce certain determinate emotions in the body. But how impenetrable soever the cause may be, the affections themselves are sufficiently obvious. If the organs be sound, and in a proper condition to perform their functions, an outward impulse never fails

to

to excite a certain passion in the mind, S E C T.
II.
that of anger, for instance: and when
once this is raised, it as surely affects
the whole body, not by agitating the
humours only, but by expanding the
solids, and raising their tone to a con-
siderable degree. These effects are ap-
parent enough from the fashion of an
angry man's countenance, and the ges-
ture of his body: and they corres-
pond so exactly with his state of mind,
that even a stranger to the cause of his
anger, would judge him to be under
the influence of that particular passion,
and no other. But, in the midst of
all this hurry, if the senses receive an-
other impulse, capable of filling the
mind with sudden terror, then we per-
ceive, that the change in the appear-
ance of the body is no less sudden.
For the blood, instead of being tu-
multuously rarified, and forced into
the lymphatics, as before, is now dri-
ven towards the center, and, in some

SECT. II. measure, chilled. Hence paleness, coldness, and a sense of suffocation. Which is a clear proof, that terror induces in the body a disposition, contrary to that, which is caused by anger. And, that other passions counteract each other in the same manner, can as little be doubted; because, in fact, the sensory can receive no impression but from the last. Just as, when you move a pendulum in one way, it will continue to vibrate in an arch of the same circle: whereas, if you push it into a contrary direction, it will obey the last impulse only. But, to give any passion its full force, it is necessary, that the sensibility (by which I mean a readiness in the elementary fibres to be put into a vibratory motion) should be great; and the outward impulse strong. Where these occasional causes cooperate fully, the passion, which they raise, whether pleasurable, or painful, may prove suddenly

denly mortal, as we learn from a variety of instances. And, indeed, tho' the immediate effect should never be so great, yet if the passion be indulged too long, it may be no less fatal in its consequences. For, by keeping the sensory in a constant tenour, it may force it at last, to contract the habit of repeating the same motion, in spite of the will; and thus, give rise to some species of folly, or madness. At least every day's experience shows us, that as too great an exercise of the body impairs the mental faculties, so any thing, that engrosses the mind too much, is very fit to weaken the bodily organs, and thereby to occasion many a morbid change in the humours.

G 4

SECT.

S E C T. III.

*Recapitulation.*S E C T.
III.

ON a review of all that has been said, it will appear, that a concurrence of many things is necessary for the enjoyment of health. It will appear, too, that an excess of any one of them is sufficient to produce a real disorder; and, consequently, that the effect must be greater, and more sudden, when many excesses are joined. I do not pretend to have treated the subject, as extensively as its nature would admit. My only design was to draw the outlines. And if, upon examining them, a judicious reader adds the reflections, which must naturally occur to himself, he will easily perceive, how the serum, or lymph, can be coagulated; how the texture of the blood can be broken; how the chyle

chyle can be rendered viscid; and how SECT.
these different changes can be associ- III.
ated. What still remains to be shown
is, that these very changes, and some
of their combinations, are, each of
them, the efficient cause of a distinct
fever. Let us consider them sepa-
rately.

The End of the first Part.

chyle can be rendered viscid; and how are C. T. these different changes can be effected. What still remains to be shown is, that these very changes, and some of their combinations, are, each of them, the efficient cause of a distinct fever. Let us consider them separately.

CAUSE AND CURE

The End of the first Part.

A
PHYSICAL INQUIRY
INTO THE
CAUSE and CURE
OF
FEVERS.
PART II.

PHYSICAL INQUIRY
A
CAUSE AND CURE
OF
FEBRILE
DISEASES
INTO THE

CAUSE AND CURE

FEBRILE

PART II.

A

PHYSICAL INQUIRY

INTO THE CAUSE and CURE

OF FEVERS.

PART II. CHAPTER I.

SECT. I.

Inflammatory Fever.

THE complaints of those, who SECT. I.
 are seized with an inflamma-
 tory fever, are not always the same.
 One man feels a general lassitude, and
 little else; whilst another complains
 chiefly of an head-ach; or of an un-
 easiness in some particular part. In
 some,

SECT. ^{I.} some, a shivering appears at first; and is soon followed by heat. In others, there is a feverish heat; but no perceivable shivering. But, notwithstanding this uncertainty, there is one thing, on which we may depend. I mean that whitish, buff-like substance, which I have hitherto considered, as a coagulated serum, or lymph. This is so true a characteristick, that when it appears on the surface of the blood, it is alone sufficient to regulate our judgment concerning the nature of the fever: we rest satisfied, that it is merely inflammatory.

SECT. II.

Of the efficient cause of an inflammatory Fever.

SECT.
II.

AS the serum, or lymph, loses of its natural fluidity, in proportion as it is rendered fizy, it is a necessary

cessary consequence, that, in the same SECT.
proportion, it should stagnate in the II.
capillary vessels; or pass through them
with difficulty. In either case, we
cannot but admit, that an obstruction
is formed to the progressive motion of
the blood, and that, if the obstruction
be considerable, the heart, which is the
principal instrument to remove all ob-
stacles, must be then stimulated into
stronger, and more frequent contrac-
tions. A Fever is the name we give
this conflict; and since it is caused
here by a siziness of the humours, we
have surely a right to infer, that this
very siziness is the immediate, or effi-
cient cause of the fever. But in op-
position to our inference, it may be
said, that, sometimes, there is a size
without any perceivable fever; and a-
gain, that a fever often attends a local
inflammation, without any immediate
appearance of size. As to the first
objection, it is certain, that a sizzly
crust

SECT. II. crust often appears on the blood of some, who labour not yet under a fever, but an uneasiness of some other kind. But what then? Is it because this size is yet too weak, to produce a fever, that it shall produce none, when it becomes stronger? To give any weight to this objection, it would be necessary to show, that if the bleeding had been neglected, and the uneasiness suffered to increase, no fever at all would follow: which, in fact, would be showing what is contradicted by experience. With regard to the second objection, it must be granted, indeed, that in some local inflammations, which give rise to a fever, it happens frequently, that no size appears until the second, or third, or even fourth bleeding; and the reason is, that such inflammations are owing, either to a constriction of the small arteries, or to an irruption of the blood into the lymphatics; or even to an extra-

extravasation: and that, in all these SECT.
II.
cases, some time is requisite, before
the lymph can be coagulated by the
heat of the fever on one side, and the
local stagnation on the other. But
the most that this can prove is, that a
symptomatic, and a real inflammatory
fever are two different things; the one
following, the other preceding a fixed
inflammation. And therefore, I can-
not but think it a strange way of rea-
soning, to contend, as some have done,
that a coagulation of the humours is
not the proximate, or efficient cause of
an inflammatory fever, merely because
a symptomatic one can exist awhile
without it. As to the remote, or oc-
casional causes, I have here nothing
more to say concerning them, than
that they are such, as I have already
shown, in several sections, to have the
power of coagulating the lymph.

S E C T. III.

*The general symptoms of an inflammatory
Fever accounted for.*

S E C T.
III.

IT is well worthy of notice, that the
size, which I reckon here, as an
efficient cause, has not the same quali-
ties in all people. In some, it is found
both thick and tough; and in others
but thin, though still of some consist-
ency. The reason of this difference is,
first, because all persons are not, in
an equal degree, exposed to the coa-
gulating cause of the lymph; and se-
condly, because in some constitutions,
the lymph is, of itself, more disposed
to coagulate, than in others. Those,
in whom it coagulates most, are peo-
ple of a sound frame, and who, of
course, have a very healing flesh.
Such people, in fact, are very subject
to an inflammatory fever: whereas
those

those are pretty much guarded against SECT.
III.
it, who carry about them an innate
acrimony; and whose humours, there-
fore, must be in a loose, broken state.
When the quantity of the size is but
small, we must not expect, that it will
then be as fit to create a variety of
obstructions, as when it is a great deal
more considerable; and therefore,
though there should be only a lassitude
in the first case, it is plain, that there
must be a shivering in the second.
As to the heat of an inflammatory fe-
ver, it depends chiefly upon the in-
creased action of the heart; and the
accelerated force, with which the hu-
mours are driven through the largest
vessels, on account of the obstacles,
which they meet with in the smallest.
It is a remark, never to be forgotten,
that in a true inflammatory fever, no
petechiæ, or spots, ever appear. The
reason is, that in this fever the hu-
mours are too thick, to run out of

SECT. ^{III.} their respective channels; and that
when petechial spots appear, they are,
as I shall show hereafter, an evident
sign, that the blood is actually in a
state of dissolution. The only erupti-
on, peculiar to an inflammatory fe-
ver, is of the miliary kind: and that
this is occasioned by a dilatation
of the miliary glands, and a pro-
trusion of their excretory ducts, is
evident from hence, that no trace
of it is ever found, until the fizy
matter be attenuated so, as to be for-
ced through these outlets, in the
form of a profuse sweat. Before a cri-
sis is formed, the urine is, for the
most part, clear; because the substan-
ces, which heighten its colour, are
retained in the fize; and little or no-
thing besides its watery element is
suffered to pass off. But, as soon as
by the action of the body, and the
force of attenuating medicines, this fi-
zy matter is fitted for expulsion,
then

then we observe, that the urine be-
comes muddy, and depofes a whitish
fediment. The bowels are not, for
reaſons to be mentioned hereafter, any
way tenſe in an inflammatory fever.
They are bound, indeed, becauſe the
juices, by which they are naturally
ſtimulated into action, are rendered
ſomewhat inert by the morbid ſiſineſs,
which prevails. But when this is cor-
rected, they begin to be eaſily moved,
and to contribute their mite to a ge-
neral diſcharge. Concerning the ſymp-
toms, which belong to the head and
breſt, I ſhall only remark, that they
are all owing to the degree, in which
the veſſels of theſe parts are ſtuffed
with the ſize which is conveyed to
them by the courſe of circulation.
And if the head and breſt be, in ge-
neral, more affected, than any other
part, it is becauſe their veſſels are,
comparatively, weaker, more tender,
and more complicated. It is certainly

SECT. ^{III.} on this account, that the head itself is oftener affected, than the breast. For, except when there is a local weakness, arising from nature, or from accident, you may observe in an inflammatory fever, that for one, who feels the greatest pain in his lungs, or any where else, twenty complain of having the greatest pain in their heads.

SECT. IV.

Of the Prognostics.

SECT. ^{IV.} **I**N an inflammatory fever, it is a good sign, first, that there should be no chronical obstructions, as they render such, as are formed by the fever itself, more obstinate. Secondly, that the first symptom should be a lassitude, or, if there be a shivering, that it should be only a slight one. Thirdly,

Thirdly, that the urine should come off freely : that it should not, through the whole course of the disorder, be altogether transparent: and that, at any time, especially towards the decline of the fever, it should depose a whitish sediment. Fourthly, that the bowels should not be hard to open, and that no stool should be involuntary. Fifthly, that the heat should not be intense, nor the skin dry; but that, on the contrary, there should be a gentle moisture through every stage of the disorder; and a warm profuse sweat towards the end. Sixthly, that the breathing should not be difficult, and that on either side the patient should be able to lie quiet. Seventhly, that there should be, now and then, a refreshing sleep; that, for several days, the patient should retain his senses; and that, if he come at last to rave, it should be only in his sleep; and even then, but slightly.

S E C T.

IV.

And eighthly, that if there be any grievous symptom, it should yield to a skilful application of medicines ; or, at least, that its violence should be, for a while, abated. These signs plainly show, that the fize, which causes the fever, is neither so tough, nor so abundant, as not to be easily attenuated ; and a physician, who observes them, may safely answer for a recovery. But, when an inflammatory fever begins with a great shivering ; when the senses are disturbed early ; when the heat is great ; the skin dry ; the bowels constipated ; the urine but little, and of a transparent colour ; in this case, the omen is far from being favourable. Not that there is yet an insurmountable danger, if the inward parts be all sound, and that, without any loss of time, proper remedies be applied. But, if there be any inward chronical complaint ; or, if by delay, or improper manage-

management, the size be suffered to SECT.
IV.
encrease, the scene alters very soon; and presents a more gloomy appearance. The signs are, a constant watchfulness; the eye staring, and inflamed; a tremulous motion of the tongue; an agitation of the whole nervous system; an high delirium; a stiffness of the joints; and involuntary stools. At this time, if the patient, though blistered, feel no pain; if, in spite of a copious bleeding, the hurry of his spirits continue much the same; if, when forced to drink, he swallow with difficulty, and be little, or not at all, affected by any thing, that is given, it is a sure sign, that the organs of sensation are irretrievably incumbered with the size; and that a final end is approaching. But the symptoms, which, next to an agony, indicate the nearest approach, are a constant repetition of the same chimerical idea; fixed, glassy eyes; a contracti-
on


SECT. IV. on of the features; an alteration of the voice; a fluttering pulse; and a laborious breathing.

SECT. V.

Cure.

SECT. V. **S**INCE, then, a siziness of the serum, or of that part of the lymph, which circulates constantly with the blood, is the cause of an inflammatory fever, the curative indication must be very evident. But, to effect an attenuation, which is the only point we should have in view, there are several means to be adopted. First, the heat must be moderated: otherwise, it would counteract the force of attenuating medicines, because, of itself, it is capable of rendering the lymph fizy. Secondly, as the humours circulate with great difficulty in the smallest vessels; and
with

with great rapidity in the largest; SECT.
V.
it is plain, that, to expedite their motion in the one; and to retard it in the other, their quantity must be lessened. This caution is by so much the more necessary, as, without it, the lymph would be still made to stagnate in the capillaries; and various experiments show, that stagnation alone is sufficient to coagulate it. Besides, a diminution of the humours is necessary upon another principle. For, by restoring the tonick force, which the vessels had, in a great measure, lost, by being obstructed in one place, and too much distended in another, it enables them to act upon their contents, and, consequently, to break and divide the fizy matter. Thirdly, as this size, when once it is impacted in any one part, is forced still further by every succeeding impulse of the humours, it is obvious, that the momentum, with which the humours flow
to

SECT. ^{V.} to this part, should be weakened; and
 this is to be done, partly, by lessening
their quantity, and partly, by the
means of revulsion. Now, to answer
these purposes, several things are re-
commended; but I know of none,
more effectual, than bleeding. To
bleed in an inflammatory fever, and,
indeed, in every species of inflamma-
tion, is a practice, quite as ancient,
as the institution of physick; and
how much soever physicians differ in
other points, they all equally agree
in this. But there is not the same
unanimous concurrence between them,
when they come to determine, how
much blood should be drawn off at
any one time; and how often the
bleeding should be repeated. Some
are for bleeding largely, five or six
times, even though the fever should
not be very considerable. Others a-
gain think it sufficient to bleed twice
in the most alarming cases; and, at
each

each time, to bleed but sparingly. SECT. V.
My opinion is, that a middle course
should be followed, and this I purpose
shewing hereafter.

SECT. VI.

Why other Evacuations are necessary.

I DO not, however, mean, that, SECT. VI.
to obtain a cure, it is always e-
nough; to draw a proper quantity of
blood. For, though a part of the
size, which causes the fever, is car-
ried off at each bleeding, yet, as it
is blended with the whole mass of
blood, some parts must remain be-
hind; and, until the whole cause be
removed, we cannot expect a perfect
recovery. Indeed, if the remaining
size could be so changed, as to be af-
similated to our humours, we might
then hope to cure the fever without
promoting the natural evacuations.

But

SECT. VI. But such a change is, I believe, impossible; and for this reason, that the lymph, when once coagulated, can never be refitted so, as to answer the end, it was destined for. Just as when you harden the white of an egg, which bears a perfect resemblance to lymph, you can never restore it to its primitive fluidity, and smoothness. So that, totally to get rid of an inflammatory fever, the size must be entirely expelled. But, as there are three principal outlets, and those too of different capacities, it may not be easy to determine, which of them is fittest for the expulsion. Certainly, as the matter, which passes through the pores of the skin, is more attenuated, and subtile, than what goes off by urine, or by stool, and, as this sily matter is then carried off most, when it is most attenuated, we have reason to conclude, that, of all evacuations, the most desirable one is that of perspiration.

ration. And, indeed, if we consult SECT.
VI.
experience, we shall find, that, without a copious perspiration, and this too of some continuance, the crisis of an inflammatory fever is always imperfect. But, salutary as this discharge may be, we should take care never to force it on, by stoving the patient; by loading him with bedcloaths; or giving him hot cordial medicines. Such a practice must necessarily defeat itself, as we shall see in the following section. Instead, therefore, of pursuing it, a physician should cooperate with the effort of nature; and this he will surely do, if by cooling, laxative, and diuretic medicines, he carries off, through the larger outlets, what is yet too gross, to pass through the narrow pores of the skin. Thus, by freeing the vessels from a great part of their incumbrance, he will put them in a condition to attenuate the remainder, and, of course, to prepare it for a critical perspiration.

S E C T. VII.

Whether or no Blisters be proper.

S E C T.
VII.

IF to attenuate the fizy matter, and to expel it from the body, be a true indication in an inflammatory fever, it must be granted, that, to answer this purpose, the use of alexipharmick bolusses, of aromatics, and tinctures, is highly improper. These hot drugs have no attenuating quality whatsoever. On the contrary, they are very fit to coagulate the serum, partly, by their own action upon it; and, partly, by increasing the feverish heat, which I have already remarked to be, itself, a powerful cause of coagulation. This I take to be an incontestible principle; but I think it is misapplied by those, who condemn the use of blisters. It is certain, that by their stimulating quality, blisters quick-
en

en the circulation, and that, by this S E C T.
VII.
means, they occasion a transitory degree of heat. But it is no less certain, that, by being absorbed into the blood, their salts attenuate all the humours. So that, if there be a temporary disadvantage on one side, there is a lasting advantage on the other; and to determine which of them preponderates, we must have recourse to experience, to which the final appeal must be in physick. If, then, by raising the heat, blisters coagulate the lymph more, than they attenuate it, by mixing their saline particles with the blood, it should necessarily follow, that, after they cease to operate, the symptoms of a coagulation should appear greater, than before they were applied. But experience shows the reverse. For, when blisters are seasonably applied, and their power no way counteracted by an unmeaning jumble of hot medicines, we find, that immediately

SECT. VII. **U**diately after their operation, the heat is less, the pulse quieter, and the fever itself somewhat abated. A proof, surely, that the good effects, which they produce, as attenuants, outweigh by much the evil, which they are said to produce, as stimulants. Nay, I am sure, that this stimulating quality, itself, how much soever it may be apprehended by some, is often of service in an inflammatory fever, particularly, in those cases, wherein it is necessary to raise the pulse, to create an artificial drain, and to procure a revulsion of humours.

SECT. VIII.

Of other Attenuants.

SECT. VIII.

THERE are several other substances, which are distinguished by their attenuating quality, and which, therefore, are recommended in this fever. Those, which hold the first

first rank, are preparations of mercury SECT.
VIII.
and of antimony. But, though the chief indication be to attenuate, one should be on his guard, not to attenuate too much, as it is a wrong method of proceeding, to run into one extreme, in striving to get out of another. Besides, where the fibres are tense, where the vessels are stuffed, and where the momentum of a dense, fizy blood is already too great, it would, I think, be hazarding the rupture of some vessels, to convey into the course of circulation any medicine, that must operate with an extraordinary degree of force. Now, the specifick gravity of mercurial preparations gives them this force; and therefore it is, that in an inflammatory fever, I do not reckon it safe, to order any of them; not even calomel, which is the mildest of all. But the same objections cannot, with equal propriety, be made to all the preparations of antimony. Some of these are

SECT.
VIII.

given in every stage of the disorder ; and are found, when managed properly, to be very successful. Those, that are used mostly, are the emetick tartar, the antimonial wine, and the kermes. As to the last, we find it of service, when the chest is principally engaged, when the heat is not great, when the fever is spun into a certain length, when the pulse is sunk ; and that the lungs are loaded with tough phlegm. In these circumstances, a great deal is expected from its incisive quality ; but in other cases, I look upon it to be too heating, and too ruffling, to be given with safety. The emetick tartar is the only preparation of antimony, that is reckoned fit for all inflammatory cases ; and, I believe, very justly. For, without having the heating quality of other antimonials, it is inferior to none in point of efficacy. It mixes more readily with every kind of vehicle ; and is less liable to be altered in
its

its virtue by any. The common neu- S E C T.
VIII.
tral salts, nitre, sal polychrest, soluble
tartar, regenerated tartar, &c. all these
salts are well known to be mild atten-
nuants, and to have, what is desirable
here, a cooling quality. But, of all
neutral compositions, I know of none
more valuable, than the spirit of Min-
dererus. And, if to these resources
we add the assistance, we draw from
the juices of tartish vegetables; from
camphire, and even from musk itself,
I believe nothing more remains to fill
up the catalogue of useful attenuants.

S E C T. IX.

Of Dilution.

THE necessity of diluting sily hu- S E C T.
IX.
mours is clearly pointed out by
nature, our surest guide. For, though
averse to food, she has a craving for
drink; and if in a high fever the con-
trary ever happens, it is not that the

SECT. IX. appetite of the patient is good; but that his organs are vitiated. A proof of this is, that he has no such perverse desire, until he begins to rave; and, as it is an exception to a general rule, so it is reckoned one of the worst of symptoms. When we wish to remove an extraordinary heat, and to quiet a violent agitation, which are both caused by a fizziness of the humours, what better expedient can we think of, than that of diluting these humours? Water is the most general diluter we know of; but water alone cannot dilute every thing. For instance, it will not mix with the hardened white of an egg, nor with oil; and to qualify it for a mixture, we must impregnate it with certain ingredients. Now the same rule holds good with regard to coagulated serum, and even the grease of the body. Water, when simple, can dilute neither. For which reason, the urine is always clear, and colourless, when

when the drink is watery, and insipid; SECT.
IX.
and therefore it is necessary, that to whatever is taken, by way of drink, some sugar, or vegetable acid, or both, should be added. Thus an excellent drink is made by sweetening light barley-water with brown sugar; and adding as much lemon juice, as is sufficient to give it a tartish taste. Two-milk whey, or what is still better, light vinegar whey naturally contains these ingredients, though in a small degree; and is therefore reckoned, even alone, a very fit drink, not only in this, but in every other fever. But, whether the patient gives a preference to either of them, or whether he uses both, alternately, it is certain, that he ought to drink a great deal. From six to eight quarts, in the four-and-twenty hours, cannot be deemed too great a complement, when we consider the necessary call there is for it, not only to restore the fluidity of the humours; and to com-
I 4 pensate,

SECT. IX. ^{IX.} pensate, in some measure, for the losses which the body sustains, while the struggle holds; but also to relax the inward parts, and to produce the effect of a tepid bathing. Towards the decline of the fever, when nature is somewhat disincumbered, and in a better condition to feel her wants, a little white-wine whey should be given now and then. Nor should it be forgotten at any period, if the fever be low. For, though medicines contribute a good deal, it must be confessed, that the fever itself, or, in other words, that the increased action of the vessels has the greatest share in attenuating the morbid size. The whole business, then, of a physician is, to take care, that this action should be always in a proper degree, neither too high; nor too low. This was a maxim of the great Sydenham; of whom it is justly said:

*Innocuas placide corpus jubet urere
flammas;*

Et justo rapidos temperat igne focos.

As

As soon as the patient begins to re-
cover from the conflict, and to have a
desire for broth, or any kind of light
food, he should be gratified; but with
this caution, that while he remains
confined to his bed, every thing he
takes should be made agreeably tartish.
The reason of this shall appear, when
I come to the cure of a putrid fever.

SECT.
IX.

S E C T. X.

Application of the foregoing principles.

I N the treatment of any disorder, there is, no doubt, an allowance to be made for a difference in age, and constitution. The dose of medicines, and the quantity of evacuations, which are fit for a strong grown-up person, are very unfit for those, who are young, or old, or of a delicate frame. But, except those two points, the mode of prescribing for all, who labour under the same complaint, should be exactly alike,

SECT.
X.

SECT. ^{X.} alike, or with very little difference. Suppose, then, for the sake of clearness, that a man of a strong constitution is seized with an head-ach, a general lassitude &c. and that the moment he begins to complain, a physician is called in. At this time, it is no way difficult to know, that there is a fever. The symptoms are too obvious to leave any room to doubt of it. But then to determine positively of what sort the fever is, and whether, or no, it will continue long, this, I believe, is not in the power of any physician. Nor is it at all necessary, that it should. For how different soever the management may be, when fevers are, for some hours, confirmed, it is a just remark, that, at the very beginning, there is one mode, which is common to them all; and which may, therefore, be adopted with safety. That is, to order the patient to bed, to advise him, if not corpulent, to take a vomit; and,

and, after its operation, to drink S E C T.
X.
largely of warm vinegar-whey. The }
design is, that, whilst the cause of the
fever is yet weak, the encreased action
of the body, the relaxing warmth of
the bed, and the diluting quality of the
drink, may possibly remove it.

S E C T. XI.

The same subject continued.

BUT if this method should prove S E C T.
IX.
insufficient the first night, I do }
not think, that, without examining the
blood, a physician can proceed much
farther with any satisfaction to himself,
or security to his patient. For, to
prescribe without a diagnostick, is to
prescribe at hazard; and certain it is,
that without knowing what state the
blood is in, no one can form a sure
diagnostick; because, at this early
period, all other considerations amount
only

SECT. only to a probability. To have, then,
^{XI.}
an infallible guide to go by, I order that through a *large* orifice, and in a *full* stream, a *small* quantity of blood should be drawn from the arm: and though these particulars may seem trivial, I take them to be of some consequence. First, because, if the blood were to trickle down the arm, or to spout out, so as in its fall to resemble a slender thread, it could not be so fit to answer the purpose of an examination; and secondly, because, if the fever be a true inflammatory one, I can again have recourse to large bleedings; whereas, if it be of the putrid kind, a large bleeding should be carefully avoided, though a small one cannot, in the least, be prejudicial. At this visit I prescribe some saline draughts, with, or without camphire; some papers of rhubarb with sal polychrest, or nitre; and thus far I am of opinion, that the method of cure is
general,

general, and may be practised at all SECT.
XI.
events. But if, upon visiting the patient in the evening, I find the blood covered with a whitish buff-like substance, I immediately begin with what is adapted to the inflammatory fever in particular. I order a second bleeding, and I regulate the quantity by the nature of the symptoms, and the consistency of the size. When these are slight, I think it enough for the patient, whom we have supposed to be of a strong frame, to lose about twelve ounces of blood. But if they be considerable, as when the size is both thick and tough; the heat great; the pain of the head very acute; or the breathing difficult; in this case, I give directions, that he should continue bleeding, until he feels himself grow weak. After this, I advise him to make the same effort as the night before: and to co-operate with the action of the vinegar whey, in attenuating

SECT. XI. **I**N ating the fizy matter, and promoting perspiration, I order that every two hours he should take three spoonfuls of a mixture, composed, partly of mint-water, partly of the spiritus mindereri, and two grains of tartar emetick.

S E C T. XII.

Continued.

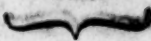
SECT. XII. **I**N the morning of the third day, if I do not find the fever on the decline, I judge it must run to a certain length ; and without making any further attempts to shorten its duration, I think it sufficient to moderate its violence. I order a third bleeding, and, if the head be engaged, I think it better to bleed in the foot ; because no revulsion is made by bleeding in the arm ; and that when either the temporal artery, or jugular vein is opened, the patient grows weak, before

fore a sufficient quantity of blood can be drawn. The formula, which I use then, and which I continue during the whole course of the fever, is this. S E C T. XII.

R. Camphoræ scrup. unum ; tere cum paucis amygdalis ; et postea gradatim affunde aq. menth. simp. unc. septem ; colaturæ adde spirit. mindereri unc. tres ; tartari stibiatî gr. duo. M. cap. cochlearia duo ampla secundâ quâque horâ.

On the evening of this day, if the symptoms be still increasing, I order blisters to be applied ; (to the legs, when the head is principally engaged ; or to the back, when the chief complaint lies in the chest) and the following morning, if the fever be not at a stand, I get him blooded again in the foot. In the mean time, I pay a close attention to the state of the bowels ; and, as I deem it necessary for the patient to go, four or five times, in

SECT. ^{XII} ~~in~~ every four-and-twenty hours, to
stool, I order two scruples of rhubarb,
and one drachm and an half of sal. poly-
chrest to be divided into eight parts;
and one of them to be taken, occasi-
onally; every second, or third; or
fourth hour. All along, the drink
should be light vinegar-whey; and in
every quart of it a scruple, or half a
drachm of nitre; should be dissolved.
The only attainable point at this period
of the disorder, is to reduce it to an
uniform tenour; of which, if no sign
appears on the morning of the fifth
day; and that, on the contrary, there
is reason to apprehend a phrenzy,
a symptom very common in an inflam-
matory fever; and which is easily dis-
covered by the fiery looks of the pati-
ent; by the violent agitation of his
whole body; and by his wild, inco-
herent speeches; in this case, I order
him to be bled again, *ad deliqui-*
um fere animi, in the foot; and
immediately

immediately after, to be blistered on SECT. XII.
the back. Nay, my chief dependence 
is upon another bleeding, if the violence of the symptoms should require it.

Not long since, I had a patient in the very circumstances I mention here. He was of a middle age, and of a very robust habit of body. By an abuse of spirituous liquors, he was seized with an inflammiatory fever, which I had an opportunity of attending him in from the very beginning. I do not recollect to have ever seen a more fizy blood. The crust which covered it, was an inch thick, and so tough, that it resisted pulling, much like leather. On the morning of the fourth day, though I had taken every early precaution, that my judgment could suggest, to hinder the fever from running high, the patient became phrenetic; and so much so, that three

K

men

SECT. ^{XII.} men were hardly able to keep him in bed. His struggles to get loose showed, that he had an uncommon degree of strength; and yet his pulse was sunk, hardly perceivable, and his whole skin covered with a cold, clammy sweat. Racks, gibbets, murder, lightning; all, in wild confusion, crowded upon his disordered brain: and when pressed to drink, he set his teeth, closed his lips, and appeared, in some measure, as if he had a locked jaw. In this situation, I was for a while in a suspense, how to relieve him. I knew that the state of his brain, and the nature of the disorder, required more bleeding; but then the state of his pulse, and the cold clammy sweat seemed to forbid it. At last, upon considering, that he had been eased by every one of the preceding bleedings; and that this sudden alarm was owing to the fizy matter's being forcibly impacted in the vessels of the brain,

brain, I determined again to get him S E C T.
XII.
bled in the foot. I stood by during
the operation, which I took care to
carry on almost ad deliquium; and
thereby I had the satisfaction of per-
ceiving an immediate calm. This last-
ed until the following day, when the
same storm began to gather; and,
what I did not perceive till then,
the pulse was not only low, but flut-
tering. This additional symptom was
truly alarming; but I was encou-
raged by my former success to o-
verlook it. I had again recourse
to bleeding; and the event prov-
ed equally fortunate. For, be-
fore I left the patient's room, the
hurry of his spirits was abated: he
fell into a profound sleep; and the
morning after, I found him in, what
I long wished for, a profuse sweat.
It was then I took it for granted, that
the fizy matter had been attenuated so,

S E C T. as to pass freely through all the out-
XII. lets. Nor was I mistaken. For, from that time, until the thirteenth day, when the fever intirely quitted him, the patient continued sleeping, now and then; sweating constantly, more or less; and deposing in his urine a whitish sediment, not unlike the inflammatory crust itself, when reduced into powder.

CHAPTER II.


SECT. I.

Putrid Fever.

ALL acute disorders begin, for SECT. I. the most part, with alarming symptoms. People then are put on their guard; and their sufferings force them to seek some assistance. But a putrid fever, though certainly acute, is scarce perceivable at first. Not that the body is, even then, at its ease; but the first workings are so faint, that they are not much attended to. Persons thus affected, are not well enough to go about business, with their usual alacrity; nor sick enough to be wholly confined. In this insidious manner, the fever creeps

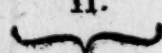
SECTION. on, for two, or three days, and sometimes more; not declaring itself openly, and yet sinking the spirits of the patient. From this character it may seem just, to draw the definition of a putrid fever; and it certainly would be so, but for two reasons. The first is, that though its general type be such as I have described, yet it happens sometimes, that, on its very first advance, it gives a full alarm. The second is, that other fevers steal on, sometimes, insensibly; though, in general, they attack without disguise. As to the other apparent symptoms of a putrid fever, they help as little to define it. These symptoms are mostly changeable, as I shall show, when I come to treat of them; and, surely, a definition, that rests upon appearances, without which the thing defined can exist, must be deemed very inaccurate. The only unalterable mark, that I know of, and, indeed, the only one,

one, that constitutes the essence of SECT. I.
this disorder, is a tendency of the hu-
mours to a state of dissolution. By
this, it is true, that a putrid fever
cannot be distinguished from an ardent
fever, from a malignant fever, from a
petechial fever, or even the plague
itself: But still it remains true, that
all these are of the same species. The
only difference is, that in some of
them, the humours are dissolved soon-
er, and much more, than in others.
But to me this does not appear a suffi-
cient cause, why they should not all
have the same characteristick. With
respect to its degrees, the attribute of
reason varies in various individuals;
and yet it serves as a mark, by which
to distinguish mankind. The very
size, which constitutes an inflamma-
tory fever, differs in different people,
both as to its density and toughness:
and, nevertheless, we look upon it, as
a sufficient mark of distinction. On

SECT. I. the same principle, then, I call that
 a putrid fever, in which a broken texture of the humours is more or less evident.

S E C T. II.

The proximate, or efficient Cause.

SECT. II.  **T**O acquire a true knowledge of this disorder, we must consider, attentively, what happens when the humours make the first advance to putrefaction. That they are then expanded, is easily proved. Break any globular body into different parts, and, though you cannot thereby change the mass, you will, certainly, make a considerable change in the surface. For the surface of any one body cannot equal the sum total of the surfaces of the parts, into which it is divided. But it is admitted, on all hands, that blood is composed of globular parts; that

that each globule is made of others SECT. II.
still smaller; and that the same mechanism prevails in the integral parts of the lymph. As soon, therefore, as, by any means, these globules are suddenly broken, it is a necessary consequence, that they should occupy more room, than they did before, when each of them was entire, and pretty firm. To this we may justly add, as an auxiliary, the effect, which is produced by the escape of fixed air. Whilst the humours remain in a sound state, this necessary ingredient makes no effort to recover its elasticity; but when their texture is broken, we all know, that it expands itself to a very great degree. Of which we may observe an instance in the course of any fermentation; insomuch, that, to prevent the rupture of the vessels, wherein the work is carried on, a proper vent must be given. Now, to my mind at least, it seems pretty clear, that the expansion,

SECT. II. fion, which is capable of distending the vessels of our frame, must be sufficient, even alone, to disturb the freedom of circulation. But there is another concomitant reason. For then the globules of the blood cannot but be forced into channels, from which, in a natural state, they are ever excluded. So that, partly, by the very expansion of the blood, and, partly, by its irruption into some of the ferrous vessels, a variety of obstructions must be formed, sufficient to quicken the motion of the heart; and here I fix the efficient, or proximate cause of a putrid fever. With regard to the remote, or occasional causes, it is plain, that they are such, as are acrid themselves, or any way qualified to induce such an acrimony, as must produce a ferment, or an intestine motion. In the first part of this inquiry I have dwelt upon this subject, perhaps,

haps, too long; and shall not there-
fore enter now into a further detail.

SECT.
II.

SECT. III.

Symptoms.

TO preserve some order in the
narration of the symptoms, I
shall divide the course of this fever
into three stages. I have hinted al-
ready, what is common in the first.
In this stage, it rarely happens, that
there is any great shivering: this symp-
tom appearing only, when the disorder
sets out very violent. Whereas, when
it comes on slowly, as it usually does,
nothing more is felt, at first, than
some slight interchanges of cold and
heat, and sometimes a mixture of both.
This sensation alone is sufficient to
make the patient uneasy; but it is of-
ten accompanied with, or, at least,
soon followed by, another, which
trou-

SECT. troubles him more. I mean, an un-
III. common weariness all over, which is
too teizing not to be severely felt ;
but which cannot be well expressed.
The patient seems, as if he had been
jaded by a long journey ; or exhausted
by some bodily labour, with this ad-
ditional grievance, that he has now a
disrelish for food, and that every suc-
ceeding moment, instead of contribut-
ing to his ease, adds still more to his
complaint. This, however, is not
without exception. In the beginning,
some patients have a few lucid inter-
vals. But this favourable aspect is of
a short duration. A weighty load of
sickness bears them down at length ;
and after a struggle of three, four, and
sometimes five days, they are forced
to confine themselves to their bed.

HERE the second stage begins ; and
it is generally from hence that we date
the sickness. The different parts of
the

the body, but chiefly the back and loins, are now weary, and painful; ^{SECT. III.} just as if they had been beaten, or bruised. And though the patients often stir themselves to find out some easy posture, they complain greatly of being hurted, when they are stirred by others. At this time, the head, the chest, and even the stomach, are affected very much. There is often an inclination to vomit; and what is thrown up, is of various colours, but resembles mostly corrupted bile. The countenance has a gloomy cast. It is bloated, and, as it were, dead-coloured. The eyes are heavy, full, somewhat yellowish, or suffused with a redness, and very expressive of an agitated state of mind. There is a loathing, a sinking, and an extraordinary weakness; and yet it frequently happens at this period, that the pulse is not much agitated; that the heat of the skin is not very great;

SECT ^{III.} great; that the thirst is not considerable; that the tongue is moist; and that the evacuations, by stool, and urine, are almost natural. This inequality in the symptoms gives the disorder the appearance of malignity; for which reason, we call it, sometimes, a malignant fever. But the scene changes, as it advances. The pulse then begins to beat quick, and its strength declines, as its frequency increases. In some, the skin is somewhat moist; in others, it is quite dry: some have profuse sweats; but all have more or less of a scorching heat. By degrees, the tongue grows foul, and parched, with deep chops; and, if care be not taken to keep it clean, it becomes covered with a tough mucus, brownish at first, but blackish at last. A furring, like this, gathers about the lips; and the roots of the teeth: and if the patient then retain his senses, he has, for the most part, an unquench-

quenchable thirst. In the mean time, SECT.
III.
if not before, the bowels become somewhat tense. The stools, which begin to be frequent, are thin, of different colours, and extremely fetid. The urine too has a sickening smell. In colour and quantity, it varies from day to day. At the height of the disorder, the quantity is commonly small; and the colour inclined to red; but towards the close, it becomes darker, like dead, or high-coloured beer; and if there be a sediment it is generally of a dusky hue. Whilst these symptoms are acquiring strength, those, which appeared at first, keep pace along with them. The mist thickens, the confusion encreases, and the patient at length falls into a state of insensibility.

I CALL this the third stage; and though some get into it much sooner, it seldom begins until from the sixth
to

SECT. to the eleventh day. In this stage, all
^{III.}
patients are not equally affected. Some are delirious, and constantly watchful; some drowsy, and even lethargick: whilst others are in a mixed condition, hard of hearing, and in some degree of stupidity. With regard to their raving, it is observable, that it seldom amounts to those high flights of wildness, common in an inflammatory fever; and that nothing, but an unseasonable use of hot medicines can raise it to that degree. But as the ferment still encreases, we perceive a tremor of the hands; a starting of the tendons; ichorous, involuntary stools; and, in fine, an aggravation of all the foregoing symptoms. As to the petechial eruption, which belongs to this fever alone, it is very changeable, with regard not only to the time of its appearance, but also to its colour and size. Without dwelling upon its variations, I shall content myself

self with this remark, that, whether S E C T.
III.
it appears sooner or later, whether it
be circumscribed, like flea-bites, or extended into large, irregular, angry blotches; whether it be red, or of any dusky colour, down to a black; that all this depends upon the time, at which the blood is dissolved; and the manner in which a greater or smaller quantity of it is extravasated. It is on the same principle, that we can account for the hemorrhages, which are common in this fever, not from the nose only, but from other excretories.

S E C T. IV.

Prognostics.

IT is a good sign, first, that for several days after his confinement, S E C T.
IV.
the patient should not be much agitated; nor his strength much exhausted.

L

Secondly,

SECT. IV. Secondly, that he should not have a dry, scorching heat; and that the sweat, if any, should not be profuse. Thirdly, that the bowels should not be swollen, nor hard, nor constipated; and yet that the stools should be neither involuntary, nor ichorous. Fourthly, that the urine should not be in a small quantity; nor of an high, reddish colour. Fifthly, that the breathing should not be very quick; nor, at any time, intercepted. Sixthly, that the delirium should not be very great; and that the patient should be neither watchful, nor lethargick. Seventhly, that there should be no tremulous motion in the hands, nor starting in the tendons, nor convulsion in the features. Eighthly, that the tongue, though foul, should not be covered with a black dry fur, nor in the least chopped. Ninthly, that there should be no difficulty in swallowing, nor an insensibility of what is taken. Tenthly, that

that the body should not be so stiff, as SECT.
IV.
to be obliged to lie in a supine posture }
only. And lastly, that no petechial
spots should appear early; and that if
they should come forth towards the
height of the fever, they should not
be broad, nor livid, nor angry. In
these circumstances, we have reason to
believe, that the intestine motion of
the blood is not great; and, conse-
quently, that nature will triumph, even
alone; or, at least, that she will want
but little assistance. Nor is there, in-
deed, very much to be apprehended
from a concurrence of many of them;
provided they do not appear, until the
disorder is far advanced, and that pro-
per relief is then administered. I ex-
cept, however, a dry, scorching heat, or,
what is still worse, an acrid, ardent
one, with very profuse sweats. These
symptoms are truly alarming at any
period; the one denoting a violent
attrition, and the other a resolution of

SECT. the globules both of the serum, and
IV. blood; which I dread so much, that
whilst they are absent, or appear only
in a moderate degree, I do not despair,
even though other symptoms should be,
at the height of the disorder, very con-
siderable. The best that can happen
then, is a slight hemorrhage from the
nose; or a gentle diarrhœa, of which I
mean to show the utility hereafter. But,
if at the commencement of the fever,
or at a period not distant from it, we
observe those symptoms, which, even
on the eleventh day, give cause to fear,
we may then be sure, that the patient
is exposed to very great danger. Not
that he would be so, if it were easy,
for a number of days, to keep things
in the same situation they appear in
then, or, at least, to hinder them from
becoming worse. But this advantage
cannot be well expected; because it is
the nature of a putrefactive ferment,
or, in other words, of an intestine mo-
tion

tion of the blood, to rise to an higher SECT.
degree, as it advances. The rapid IV.
progress, which it makes, is clearly indicated by an increase of the symptoms; and, if to these we add what a further growth will surely produce, the scorching heat, and profuse sweats, which I have mentioned above, there can be no doubt but that an agony will soon follow.

SECT. V.

Cure.

I HAVE said, that the proximate SECT.
cause of this fever, is a putrefac- V.
tive ferment, raised in the humours; and of this it is, perhaps, no small proof, that the whole cure consists in governing this ferment, and giving a right turn to its motion. But, to succeed in this point, we must previously consider for what end the motion it-

SECT. ^{V.} self is raised, and what changes it produces in the body, during its existence. These considerations are by so much the more necessary, as, without the first, we might suppress the ferment too soon; and, without the second, we might suffer it to run too high. First, then, that it is raised to free the blood from septick particles, conveyed to it by the means of contagion, or interwoven with it by an abuse of the non-naturals, cannot be doubted; since, as soon as a thorough depuration is made, the body recovers its natural tranquility: and, secondly, that, while it exists, it tends to corrupt the whole mass of fluids and solids, can, I think, as little be doubted. Witness the resolution of the blood, and the flaccidity of the fibres; the offensiveness of the sweats, and of other evacuations; the number of livid spots, and other mortifying blotches; all which are common in this fever,
and

and which it is impossible to account S E C T.
for upon any other principle. From V.
hence, it appears, that as a moderate
ferment is necessary, and should there-
fore be supported, because, without
it, no separation can be made of what
is tainted from what is pure; so, too
great a ferment should be restrained;
because, if, suffered to operate on, it
would spread corruption still wider;
and elude at last the force of medi-
cines. These two points are, in my
opinion, the only curative intentions a
physician should have. Let us exa-
mine what he must do to fulfil
them.

S E C T. VI.

Whether or no bleeding is proper.

IN the beginning, when the symp- S E C T.
toms run high, some think it ne- VI.
cessary to bleed often; and this they

SECT. VI. do upon a presumption, that inflammations are then forming in different parts of the body. Indeed, to say nothing of what passes internally, it is evident, from the colour of the eyes, and the red spots, which appear on the surface of the skin, that there is a suffusion; or, in other words, that there is an irruption of blood into the serous vessels. And how could it be otherwise? The blood cannot be dissolved, without being expanded in the same proportion; and whilst it is in this state, we can readily conceive, that a slight agitation is sufficient to force it out of its proper channels. Thus it is, that hemorrhages are brought on; and the bloody sweats, and bloody urine, which have been observed in pestilential fevers, cannot be ascribed to any other cause. But, surely, to remove this mode of inflammation, (if, in the present case, it may be called by that name) the surest

surest way is, to check the ferment, SECT.
VI.
that occasions it. And can this be done by repeated bleedings? When you wish to make a ferment operate slowly, will you succeed the better, by taking away a part of the fluid to be fermented? In my mind, you may almost as well, to quench a flame, take away, first, a part of the materials, and then throw gun-powder on the remainder. Besides, we know, that when a fermentative motion is raised in the humours, it is, in a great measure, counteracted by the firmness of the blood itself; and by the tonick action of the fibres. And is it consistent with reason, that to bleed often, is a means of increasing both? Experience, at least, evinces the contrary. They, who have succeeded most in curing the plague, which holds the first link in the chain of putrid fevers, have made no mention of bleeding, or mentioned it only to condemn

SECT. demn it. The lancet is seldom, if
VI. ever, used in warm climates, where
putrid disorders are very rife. And, amongst ourselves, does not common observation show, when the fever is putrid, and no way complicated, that, after every large bleeding, the symptoms become a great deal worse? With regard to the hemorrhage from the nose, which is a pure effort of nature, and which may seem, therefore, to indicate the necessity of bleeding, we must observe, that, to be salutary, it should be only slight. A mere show of it is certainly to be wished for; not because it lessens the quantity of the blood, that circulates; but because it unburdens the vessels, in which some blood, that had been thrown out of the natural course of circulation, had stagnated. However, I do not disapprove a small bleeding at first. On the contrary, I look upon it then to be absolutely necessary. For, without
seeing

seeing the blood, it is scarce possible, SECT.
VI.
at an early period, to form a true diagnosis; and he who prescribes in physick, without this guide, may justly enough be compared to a pilot, who drives about in the wide ocean without a compass.

SECT. VII.

Concerning other evacuations.

WHILST any thing putrid lies SECT.
VII.
in the stomach, or intestines, every one knows what the body suffers. No part is free from an uneasy sensation; and if by puking, or purging, or both, the cause be not removed, before it reaches further, we doubt not, that a fever may follow. Is it not then a necessary consequence, that the very same thing should keep up, and even increase a fever, which is by other means already kindled? To my apprehension,

SECT. VII. prehension, nothing is clearer: and, that during the course of this fever, there should be something more or less putrid in the intestines, is equally certain. For it is a maxim, that the secretions partake of whatever state the blood is in: so that, when the spring itself is tainted, that, which flows from it, must be so likewise. This is true with regard to all the secretions; but it is more particularly so, with respect to the bile; which, even in a natural state, is, of all humours in the human body, the most apt to putrify; and which, of course, must be still more so, when a general tendency to putrefaction actually prevails. It follows, therefore, that, to cleanse the bowels, in the beginning of a putrid fever, and to keep them clean during the course of it, is the first step, that should be taken towards a successful method of cure. Next to this, we should not forget to promote the discharge of
urine,

urine, and, in a slight measure, that SECT.
VII.
of perspiration. They are the principal drains, through which we may expect to purify. But, though nature points out the necessity of such evacuations; since, of her own accord, she brings on a puking at first, and a purging after; yet, in co-operating with her efforts, we should use no violent medicines. All mercurial preparations dissolve the humours. Those of antimony do the same. It is evident, then, that neither the one, nor the other, should be given in a putrid fever, where the danger is by so much the greater, as the humours are in a state of dissolution. On this principle, every unbiaſſed person may easily judge, whether or no it be safe, at least in this case, to give Doctor James's Powders. There is so much industry used in keeping these powders a profound secret, that, though it were thought worth while to analyse them, no one
can

SECT. can be sure of discovering all the ingredients, that enter into their composition. But, be this as it may, it is certain, from their mode of operation, that they contain, among other things, if not some mercurial preparations, at least, a good deal of antimony. So that, notwithstanding the pompous title, which they bear, they ought to be, and, I think, they are, justly exploded by all rational practitioners. Indeed, in an inflammatory fever, where there is an indication to attenuate, these reputed all-healing powders may do some service; and then, to avoid being teized, a physician may yield to the solicitation of those, who raise a clamour in their favour. But, to connive at the administering of them in a putrid fever, where the approaches of death keep pace with an increase of dissolution in the humours, this surely must be unpardonable in any man, whose profession

sion it is, if not always to relieve, at least never to injure. SECT.
VII.

SECT. VIII.

Of Antisepticks.

WHEN a putrefactive ferment is raised in a living body, it must not be supposed, that the humours are all at once resolved into a mere putrid ichor. No one could survive a change of such general corruption. What is meant, and what appearances justify, is, that, in a putrid fever, the humours make some advances towards this change; and that, in every succeeding advance, the infection is propagated from the parts, which are already tainted, to those which are as yet, in some measure, sound. It is in this progressive manner, that corruption spreads every where. So that, though we should expel what

SECT. is entirely resolved by putrefaction,
VIII. still the ferment must continue; and
for this reason, that the infection adheres to parts, which, as long as they remain any way found, cannot be fitted for a passage through any of the emunctories. We may readily conceive, then, that, to cure a putrid fever, it is not enough to make use of evacuations alone; and that, effectually to remove the cause, we should give such medicines, as are qualified to counteract the force of the remaining infection. We call these medicines by the name of antisepticks; and they are of three sorts: mineral acids, which increase the firmness of the fluids and solids, and render the prevailing alkali neutral: vegetable astringents, which brace up the fibres, and help to keep the constituent globules of the blood in a proper degree of cohesion: and vegetable acids, which saturate, indeed, but do

do not strengthen. As to the sub-
stances, which cannot be reduced to
either of these classes, and which are
found, nevertheless, to be correctors
of putrefaction, I am apt to think that
their antiseptick quality, in the hu-
man body at least, is owing to the
power, which they have, to enliven
the spirits, and, at the same time,
to promote some evacuation. What
makes me entertain this opinion is,
that musk and camphire, which are
reckoned antisepticks, cease to be so,
when they do not raise the pulse; and
bring on a gentle perspiration.

S E C T. IX.

Of Blisters.

HITHERTO, I have observ-
ed, that there are but two
ways to restrain the ferment of a pu-
trid fever. The one is to cleanse;
M and

S E C T.

IX.

SECT. and the other is to strengthen. I have
XI. observed too, that to succeed in both,
no medicines should be given, as eva-
cuants, but such as are of a gentle na-
ture, and have little or no power to
attenuate. Otherwise, you would des-
troy, in fulfilling the first indication,
what you mean to establish in fulfilling
the second. Now, if this remark be
just, upon what principle can blisters
be deemed proper? Doctor Huxham
condemns the promiscuous use, that
is made of them, upon this occasion;
but he owns, at the same time, that,
if towards the decline, or at any other
period of this fever, “the solids grow
torpid, the circulation languid, the
spirits effæte, and the sick comatose,”
that, in this case, the application of
blisters is absolutely necessary. I re-
vere the memory of this great man;
but, with deference to his authority,
I think, that the very objections, which
he makes to the practice of those,
who

who blister early, when the fever runs high, may be made at least, with equal force, to his own. The reason of his disapprobation is, that the acrid salts of the flies dissolve the blood, and consequently hasten on its putrefaction. Very true: But pray, will they not produce the same effects in the very case, wherein he approves of their application? such is the nature of a putrid fever, that as it advances to its full height, the fluids and solids become more resolved; and the consequence is, the above train of symptoms. So that, whenever they appear, we need no other proof, that the dissolution of the blood, and its putrefaction of course, is then greater, than before. How, then, can it be supported, that blisters will do a great deal of service, when the blood is greatly dissolved, and that, when it is less so, they will do a great deal of harm? In answer to this, if the advo-

S E C T.
IX.

SECT. IX. cates of Doctor Huxham's opinion appeal to experience, they, who apply blisters early, may do the same; and, I believe, with greater justice. But the truth is, that reason and experience refute them both. Except, however, one case, that is, in the beginning, when the ferment is not yet great; nor the dissolution very manifest. Here, indeed, I own, that blisters may answer a salutary purpose, because they make an artificial drain, which rarely, if ever, dries up during the whole course of the fever. But even then, I give particular directions, that they should not be kept on longer, than ten, or twelve hours; because the advantage we expect from them, may be obtained within that space of time; and that to keep them on beyond it, would be to favour, what we ought to avoid, a further introduction of their saline particles.

S E C T.

S E C T. X.

Regimen.

I NEED only mention, what every one knows, that during the course of a putrid fever, no solid food should be given. Broth itself, though easily digested, is then highly improper, as it increases the alkalescent disposition of the humours. Nor is any drink fit, except that which is, in some degree, antiseptick. All wines are of this nature ; those principally, which are tartish, and subastringent. Thus, in an obstinate diarrhæa, which frequently attends this fever, claret-whey is an excellent drink ; and in the opposite case, hock-whey deserves a preference, as being less binding. But, when both are counterindicated, by an extraordinary heat, or an in-

SECT. ^{X.}crease of raving, some light acidulated drink should be substituted in their place, and taken in great plenty. For though the matter to be washed off is different; yet the necessity of dilution is here the same, as in an inflammatory fever; since corrupted humours, like coagulated lymph, can never be fitted for any purpose in the animal œconomy; and should therefore be expelled. Towards the decline of the fever, when the hurry subsides, and the patient ceases to have a loathing against food, he should then be supported with some sort of nourishment; not animal, for the reasons already given against the use of broth; but that which is of the vegetable kind. Gruel, with wine, sugar, and lemon juice; panado, with the same ingredients; or, what some people like very much, flummery, or bread and butter-milk, are, either of them, very proper for a few days: and when
it

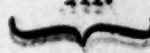
it is thought fit to make a change, SECT. X.
there should be care taken, for some
time longer, to correct the alkalescent
quality of animal food, which may be
done by the addition of some vegeta-
ble acid.

S E C T. XI.

Application of the foregoing principles.

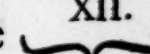
THAT the points, of which I SECT. XI.
have spoken in general, may
be drawn nearer to practice, I will
suppose a patient, the moment he finds
himself indisposed, to be visited by a
physician. I will suppose too, what
is very common, that the first com-
plaints are so vague and unsettled, as
not to characterize any particular fe-
ver. What then is to be prescribed?
I follow the very method, which I have
recommended in the beginning of an
inflammatory fever. It cannot, under

SECT. ^{XI.} the restrictions already mentioned, be prejudicial in any case. And if the faint workings, which are now perceived, be the forerunners of a putrid fever, an early vomit, succeeded at night by a gentle perspiration, and, in the morning, by laxative stools, may go a great way to prevent it. I take this to be very true, when applied to those, who are naturally of a sound vigorous frame, and who, therefore, seldom, or never, get a putrid fever, but from contagion. In such people, experience shows, that before the infection be deeply rooted, so as to confirm a fever, it may be expelled by timely evacuations. And as for those, who are of a bad habit of body, who have an acrimony in their humours, and who therefore carry about them the seeds of a putrid fever, they, too, may receive benefit from the same practice. And though it should not succeed, as a preventive in either, still it cannot but be

be of service to both, as it helps, in S E C T.
a great measure, to lighten their bur- ^{XI.} 
den.

S E C T. XII.

The same subject continued.

BUT the following day, suppose S E C T.
the fever to continue, how are ^{XII.} 
we to distinguish it? Appearances,
indeed, may direct somewhat. A good
deal may be learned from the constitu-
tion of the air, and that of the pa-
tient. But still there can be no cer-
tainty. For it is possible, that, in
the midst of contagion, a fever, no
way putrid, may be produced by a
variety of other causes: and, on the
other hand, where we judge, from ma-
ny circumstances, that the fever is
simply putrid, it is very possible, that
it may be one of quite another kind;
or, at least, that there may be a com-
plication.

SECT. XII. plication. So that, to arrive, in this case, at a certain point of knowledge, there is no other way, than to examine the blood. I order the small quantity, which is drawn for trial, to be kept in a safe place; and as soon as I discover, that it is free from any size, and of a loose texture, I enter a protest against all alkaline salts, and alkaline spirits; against all mercurials and antimonials; and, indeed, against every thing, that has a strong power to act, as an attenuant; but none, as an antiseptick. Not that I think it proper, whilst the complaint is slight, and yet in its infancy, to give the strongest of antisepticks, such as the bark, and mineral acids. Far from it. These remedies, I apprehend, would suppress the ferment at a time, when it ought, perhaps, to be raised; or, at least, suffered to work on: and thus, instead of assisting nature in bringing on a depuration, they would frustrate her

her efforts, and concentrate the dis-
ease. To avoid this error, which, I ^{SECT. XII.}
am sure, is committed often, I pre-
scribe the following mixture.

R. Camphoræ scrup. j. tere cum
paucis amygdalis; & postea gradatim
affunde aquæ menth. simp. unc. sep-
tem; colat adde spiritus mindereri
unc. ii. mixt. cap. cochlearia duo am-
pla secundâ, vel, saltem, tertiâ quâque
horâ.

The obstructions, which are formed
in a putrid fever are soon resolved,
when the ferment runs high; because
the humours must be then broken,
and fitted, consequently, either to be
absorbed, or to pervade the capillary
vessels, in which they had been im-
pacted. But when the fever is low,
as in the beginning it usually is, these
obstructions often continue refractory;
insomuch, that, to remove them, such
antisepticks

SECT. XII. antiseptics should be used, as are gently aperitive. The above mixture is of this kind, and so are vegetable acids, and a little nitre, or sal polychrest, added to a few papers of rhubarb. For which reason, I think it sufficient, as long as the fever remains within moderate bounds, to proportion the dose of these medicines only.

SECT. XIII.

Continued.

SECT. XIII. **I**T seldom happens, however, that a putrid fever is so inconsiderable, as to require no other treatment. Suppose then the ferment to run high, and that the symptoms are of such a kind, as to justify our apprehension of either present or future danger: In either case, I change the foregoing prescription, and substitute this.

R. Cort.

R. Cort. peruv. in pulverem triti S E C T.
unc. unam. Coque in aquæ fontanæ XIII.
unc. quatuordecem ad unc. decem. Co-
laturæ adde elixir vitrioli acidi q. s.
ut grata concilletur aciditas. M. cap.
cochlearia duo ampla secundâ quâque
horâ.

As an antiseptick, this mixture is certainly sovereign, though, as an astringent, it may possibly check the natural discharges, and, in that proportion, hinder a thorough despumation. There is, indeed, no advantage, without a kindred evil; but here we have a remedy; that is, to have recourse to some rhubarb, and sal polychrest, and to proportion the dose of them, so as that, every four-and-twenty hours, the bowels may be kept sufficiently free. But, in no case should the *ne quid nimis* be more attended to, than here: since it would be no less dangerous to have too many stools, than none

SECT. none at all. And therefore, if a colli-
XIII. quative diarrhæa should come on, and not yield to the binding quality of the bark and the elixir of vitriol, we ought immediately to call in the assistance of other astringent remedies. The best I know of is claret-whey, with cinnamon, and some papers of toasted rhubarb, nutmeg, and alum. I never use any other means, unless there be a violent hæmorrhage at the same time; and then my last resource is, any common drink, acidulated with the weak spirit of vitriol. Some take opiates to be very useful, not upon these occasions only, but where there is any sort of convulsion. But, I confess, I cannot bring myself to entertain such an opinion of them. They certainly expand the humours, and relax the solids; and, on this account, I think them rather prejudicial in a raging putrid fever, where the expansion and relaxation are already too

too considerable. As to the nervous SECT. XIII. twitchings, which never appear until towards the height, or decline, of the fever, and which are then the effects of a prevailing alkalescence, they are best removed by a continuance of the foregoing antisepticks, and by the addition of a musk julep; which has these other good qualities still to recommend it, that it raises the pulse, and promotes a gentle perspiration; consequences very desirable at this time. I shall conclude this section with the history of a case, singular indeed, but literally true.

MARY DONELLY, a well-made, young woman, who had been slightly disordered by her husband, was advised to take, every night, two grains of calomel, made into a pill; and, every second night, to wash it down with a little purgative mixture, composed of manna, salts and common water. This course

SECT. XIII. course she followed for some time, without perceiving any inconvenience from it; not even so much as an increase of any evacuation. But scarce had she taken the tenth pill, with the usual complement of the mixture, when she began to feel a swelling in her stomach, attended with a disagreeable sensation of heat, and an extraordinary sickness all over. That night she spent restless; and the day after, her skin became red. In this painful situation, she continued for fifty hours, taking nothing but whey, and that too but sparingly. On the evening of the third day, her hands became brown, and the following day, her skin was all black, infomuch, that a stranger to her, and to the cause of the appearance, would judge her to be one of those, who are naturally of that colour. There was this aggravating circumstance besides, that though her eyes were open, her tongue ductile, and her joints no way inflexible;

inflexible; yet she could not speak, SECT.
XIII.
nor see, nor stand. Such was her condition, when she was brought to me, while I was attending at the Inn's-quay infirmary. It was not difficult to know, that the whole cuticle was actually in a gangrenous state. The consideration of what had preceded, joined to that of the present appearance, was enough to banish all doubt. But whether or no any of the interior parts were mortified at the same time, I shall not determine. The breathing, indeed, was not much affected; but the pulse was so low, that I could hardly discern its motion. The novelty of the complaint surprized me much; and I resolved to watch its progress. I saw her the day after; and I was glad to hear, that she had received some benefit from the mixture, which I had ordered the day before, and which was composed of some cordial confection; camphire, and the spirit of mindere-

S E C T. ^{XIII.} rus. At this time, her pulse was raised a little: she was able to see me, and to articulate something, though not distinctly. I began then to hope, that a continuance of these remedies would make the cuticle fall off in dry scales, and that the impending danger would be warded off easily. But I was mistaken. In two days after, the epidermis burst in different places; and from the crevices there issued an ichorous substance, corrosive to an high degree, and extremely fetid. Still, however, the breathing was rather favourable, and continued so to the last. But all the other symptoms were of the worst kind, and such as attend the worst sort of putrid fevers; a raving; a constant watchfulness; the hands trembling; the pulse quick and fluttering; a considerable degree of heat; an inexpressible agitation; the stools thin and frequent, involuntary and bloody. Nor was this all; that which
caused

caused the greatest alarm, was an ooze-
ing of blood, not from the vagina only, S E C T.
XIII.
but from the ears, the eyes, the nose,
the gums, and even from the back of
the legs. The blood clotting upon
the surface of the skin, and yet pene-
trated by the sanious humour, that
leaked from the ulcers underneath, ren-
dered her an object, offensive enough
to the sight, and still more so, to the
smell. The indication was clear, and
had been so all along. It was to pre-
vent a further dissolution of the blood,
and a further growth of the mortifica-
tion. I ordered, therefore, what I have
already mentioned, that a strong de-
coction of bark, and every drink she
took, should be acidulated with the
elixir of vitriol; that every four-and-
twenty hours she should take about ten
ounces of the first, and four or five
quarts of the last; that now and then
she should drink a teacup-full of strong
claret whey; and that every third hour

SECT. she should take a paper of powders,
^{XIII.} composed of toasted rhubarb, nutmeg,
and alum. This method answered my
expectation, as, in some time after, I
found, that not only the diarrhæa, but
also the hæmorrhages were, in a great
measure, restrained. But still the skin
continued in a most shocking figure,
ulcerated all over, and so intolerably
fetid, that even the patient's mother,
who was the only nurse-keeper, could
not, without fainting, remain long close
to her. I directed then, that, besides
a continuance of the above medicines,
some vinegar should be often burnt in
the garret, wherein the patient lay;
that as it was the month of July, when
no danger could be apprehended from
the coldness of the weather, the win-
dow should be kept half open, at least,
during the course of the day; that an
ounce of cerate should be beat up with
half a pint of the decoction of bark;
and that with this the most angry parts
of

of the skin should be moistened once or twice a day. The consequence was, SECT.
XIII. that the ulcers dried gradually, and that a scaly crust was formed all over the body. As this fell off, a new cuticle appeared, and I fancied the disorder would soon terminate. But, to my great surprise, this too became ulcerous; and after being treated, and removed in the same manner, as the first, it was succeeded by a third, which gave way to a fourth; and this, in its turn, to a fifth. So that it was only the sixth growth, which escaped the fate of all the rest. And even under this, several large boils were formed, which seemed to be of a bad kind; but which soon disappeared, without leaving any disagreeable mark behind them, though they had all been opened, some by nature, and others by the lancet. At last, after seven weeks confinement, this often-flayed woman began to crawl, stripped of her nails, and even of all

SECT. her hair. I made her persist for five
XIII. weeks longer in the use of the bark,
and of antiseptick food. She is now
found, at least in appearance. The
lumen purpureum juventæ is indeed
gone, and, I believe, for ever. But
in no other respect is she disfigured.

CHAP.

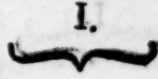
CHAPTER III.

SECT. I.

Compound Fever.

IT is certainly a very essential SECT.
I.
point in the practice of physic, to distinguish, even in general, the real putrid from the real inflammatory fever. But this is not enough. It is still necessary to trace the boundaries of each, and to know clearly when they enter into an alliance. Indeed, as long as each of them stands uniform, and distinguished, they are as opposite, as any two things can possibly be; the one being founded on the siveness, the other on the dissolution of the humours. And therefore it is evident, that the mode of

SECT. treating the one should differ, essentially,
^{I.}ally, from that of treating the other. But, opposite as they are in their own nature, we find them often united in the same person; and the result of their union is what I call a compound fever. I am not fond of multiplying names. On the contrary, I wish we had in physick a smaller number. There is, however, room to introduce here a new one. The surface of the blood, after it settles, for a while, in a teacup, is often covered with a thin pellicle, which resists the pressure of the fingers but slightly; and which is of various shades, from a faint olive colour, down to an obscure green. Where we make this discovery, shall we say, that there is nothing more than a simple putrid fever? If we do, we shall certainly convey a wrong idea. For, in a fever, that is merely putrid, no pellicle, or size, is ever seen: and, besides, the blood concretes here more firmly,

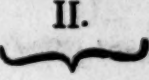
firmly, than it ever does in a real pu-
trid fever. Neither is the opinion, ^{I.}  S E C T.
that the disorder is then truly inflam-
matory, more accurate. First, be-
cause the size, which characterizes
an inflammatory fever, is tough, white,
and thick: and secondly, because the
blood, which lyes under the pellicle,
is not quite so dense, as that which
is drawn in a fever of the bare inflam-
matory kind. When a thick inflam-
matory crust begins to putrefy, you
may observe a gradual decrease of its
consistency and toughness; and that,
towards the end, it degenerates into a
thin, brittle pellicle. You may ob-
serve too, that its colour changes, in
the same gradual proportion, until it
becomes quite green, and runs off at
last *per deliquium*. Hence, I conclude,
that in any feverish case, wherein a
size appears modified in this manner,
the fever itself is compounded, partly,
of the putrid, and partly, of the in-
inflammatory;

SECT. ^{I.} **flammatory**; but that the first prevails, when the size is greenish, thin, and brittle; and that, when it is otherwise, the second is predominant.

SECT. II.

The cause of a compound Fever.

SECT. ^{II.} **L**ITTLE more needs be said concerning the efficient cause of this fever, than that it is a combination of the efficient ones, which I have already mentioned. The only difficulty is, to conceive how causes, so diametrically opposite, as a coagulation of the lymph, on one side, and a putrefactive ferment of the humours, on the other, can be united at the same time, and operate so, as to produce a joint effect. But that which happens in other cases, may happen here likewise. In the infinite variety of
of

of natural combinations, and even in SECT.
those of art, we perceive things, the ^{II.} 
most remote imaginable from each o-
ther, united in the same object. We
perceive too, that they concur mu-
tually in producing an effect, diffe-
rent from that which each of them
would produce separately, and yet
participating of the nature of both.
And as for the present case, let it be
remembered, that an introduction of
cold congeals the serum and blood, at
the same time that the perspirable
matter, which is suppressed by this
introduction, tends to dissolve them.
In reality, those are most subject to
this fever, who are most exposed to
the inclemency of the weather. Not
but that other remote causes may con-
cur. But it can answer no purpose
to mention any more; since the ap-
pearance alone of the blood is suffici-
ent to show, that the combination is
not only possible, but actual.

SECT.

S E C T. III.

*Symptoms.*S E C T.
III.

IT is with the Symptoms, as it is with the Fever itself, and its cause. They are of the mixed kind. So that we may observe, in general, that the compound fever does not come on so speedily, as that which is inflammatory; nor quite so slowly, as that which is putrid. That, at the beginning, the interchanges of cold and heat are more manifest, and more frequent in this, than in any other continued fever. That in either head, or chest, and sometimes in both, the patients feel an heavy pain; but that it is rarely so considerable, as to hinder them from complaining of a general lassitude, and sickness all over. That the strength is not so exhausted here, as it usually is in cases, which are merely

merely putrid; but that it is more so, SECT.
III.
than in those, which are entirely in-
flammatory. That when a raving
comes on, it holds a middle degree,
between the extreme of stupidity, and
a violent hurry of the spirits. That
the heat is great, owing to the projec-
tile force of the size, to the obstructi-
ons which it creates, and to the in-
testine motion of the blood. That, in
the beginning, the body is rather cof-
tive; but that towards the decline, a
putrid diarrhœa often comes on. That
the eruptions, which appear after an
abundant perspiration, are, generally,
of two distinct kinds; the one mili-
ary, and the other petechial. And,
finally, that the sweats, which are
truly critical, in a simple inflamma-
tory fever, are not always so in this.
Not that they fail of giving some re-
lief, especially when they are neither
forced, nor profuse; but though they
carry off the inflammatory size, still
the

SECT. the putrefactive ferment may remain,
^{III.} and protract the fever yet further.

SECT. IV.

Prognosticks.

SECT.
IV.

WHEN the humours are a great while agitated, and not sufficiently refreshed, it is natural, that their texture should be broken, and that they should assume an alkaline disposition. This effect may be still increased by a long-continued use of attenuating medicines. So that, though a putrid fever can never become inflammatory; yet an inflammatory fever may become putrid. At least, in a compound fever, where the size is more or less putrid from the very beginning, a degeneration of this sort is very common. And, indeed, it is a good sign, when the change is perfect. Whereas, if only a part of the inflammatory size be resolved

resolved by putrefaction, and that another part be rivetted in the capillary vessels of the brain, or lungs, or bowels, there is much to be apprehended; and the more so, because the dissolved state of the blood will not then permit the use of such attenuating medicines, as would, in other cases, prevent the fatal consequences of an inflammation. As to the other prognostics of this fever, they bear a close affinity to those, which have been mentioned already, and need not, therefore, be repeated here.

S E C T. V.

Cure.

IN all complicated disorders, it is very difficult to act with judgment, and the present case is, surely, an instance. On one side, the antiphlogistick treatment is indicated; because it is the

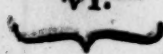
^{V.}
SECT. the only one, that is fit to attenuate
the inflammatory size. But then we
should remember, that it is, in a great
measure, counterindicated by the putre-
factive ferment, which is actually raised
in the humours. On the other hand,
this growing putrefaction would require
the use of antiseptick remedies; but
the inflammatory size absolutely forbids
such of them, at least, as are of the
astringent kind. What then is to be
done? I think that, which we do in all
other intricate cases; and which is, to
obviate the greatest danger. Therefore,
since the principal thing to be appre-
hended in the beginning is, lest the
sized matter should be accumulated in
any internal part, so as to form ob-
structions, that might terminate in some
irremediable disorder, the first indicati-
on should be to attenuate this size:
and certainly, the second one should
be to guard against the progress of the
putrefactive ferment. In a word, I
think,

think, that, to cure the compound fe-
ver, we should begin with the means, SECT.
V.
which we employ advantageously in the
cure of what is simply inflammatory;
and to end with those, which are found
successful in the cure of what is mere-
ly putrid. But still there are certain
restrictions, which it is necessary to
know, and which, therefore, shall be
examined in the following sections.

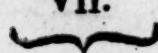
SECT. VI.

Of Bleeding.

IN a real inflammatory fever, I have SECT.
VI.
shown, that bleeding is our princi-
pal resource; and that, in this point,
we should be directed, not so much by
the motion of the pulse, as by other
alarming symptoms. I have shown too,
that in a real putrid fever, the lancet
should be spared, and that no more
blood should be drawn, than what is
O barely

SECT.
VI.  barely sufficient to enable us to form a
diagnostick. Here, then, as we find a
combination of both these fevers, it is
reasonable to imagine (and experience
does not evince the contrary) that we
should bleed, not indeed so copiously
as in the first, but a good deal more,
than in the last. What I take to be
the rule is, that the vein should not be
kept open until a weakness comes on.
Otherwise, you might irretrievably sink
the spirits of the patient, and hurry on
the putrefactive ferment; but as long
as he finds benefit from it, a moderate
bleeding should be repeated; otherwise,
the fizy matter might be irrevocably
fixed.

SECT. VII.*Concerning Blisters.*

SECT.
VII.  **I**T has been already established, first,
that in an inflammatory fever,
blisters are of service, because they at-
tenuate

tenuate the fizy matter, and create an artificial drain; and secondly, that in an high, putrid fever, they are dangerous, not because they make a drain, which, in itself, is rather useful; but because they dissolve the humours; and this at a time, when a further dissolution is the only thing, that should be guarded against. Now, as in the beginning of a compound fever, the humours are rather fizy, and that, towards the end, they become dissolved, I think that in the first stage, blisters are clearly indicated; but that to apply them in the last, is such a practice, as cannot be warranted by experience; nor founded upon any rational principle.

S E C T. VIII.

Of other evacuating Medicines.

WHAT has been said with regard to the timing of Blisters, may be applied as justly to the other eva-

S E C T.
VIII.

SECT. ^{VIII.} **VIII.** **cuating medicines.** Such of them, as have an attenuating quality, are indicated in the beginning of this fever; and the necessity for them is founded upon the principle, on which they are given in a fever, that is simply inflammatory. Except, however, the strength, and dose, and continuance, which, in the present complicated case, should be varied, according to the appearance of the size, and the state of the blood, which it covers. But towards the latter end, when the fever assumes a real putrid character, these medicines should give way to those, which operate in quite another manner; and which, on this account, are placed in the class of bracing antisepticks. Not that even these should be given here so copiously, nor be so strong, as in that which has been all along a raging putrid fever. But in a moderate quantity, there is certainly a call for them at this time, and not sooner: since it would be no less

less dangerous a blunder to give the SECT. VIII.
bark, for instance, in the *beginning* of
a compound fever, than to give strong
antimonials, or Doctor James's powders
at the *end*.

SECT. IX.

Application of the foregoing principles.

AT the very onset of this fever, SECT. IX.
suppose the same caution, IX.
which I have mentioned, as a preven-
tive in all other fevers, is used: and
that, after having failed of success,
the first night, the physician sets about
making a right distinction the day af-
ter. Since the surest standard we have
is the appearance of the blood, I or-
der a small quantity to be drawn for
trial. As soon as this settles, nothing
more than a superficial view is requi-
site, to know, if it be any way in-
flammatory. But to distinguish the

SECT. IX. real inflammatory size, from that, which is, in the least, putrid, a close attention should be paid to its colour, and the resistance, which it makes to the pressure of the fingers. No sooner am I satisfied of its being a compound fever, than I prescribe the mixture, which I have directed for the cure of an inflammatory fever, and which is composed of camphire, the spirit of mindererus, and two grains of tartar emetic. In the mean time, I order some gentle, opening medicine, and plenty of light vinegar-whey. The next morning, if the fever still continues, I make no alteration, but recommend another bleeding: and on the fourth day, I defer no longer the application of blisters, provided I discover, that the fever is likely to increase, or to be attended with any grievous symptom. But as to a third bleeding, on or before the fifth day, I am guided, not so much by the
state

state, in which I find the patient, S E C T
as by that in which he found himself, IX.
after the last bleeding. If he got no
ease at all, I fear another bleeding
would injure more, by hurrying on the
putrefactive ferment, than it would
relieve, by lessening the force of the
fizzy matter; and therefore I refrain
from it. But, in case I learn that
the last bleeding was of service, I
think it necessary to repeat it here;
and the reason is the very opposite to
that, which would have deterred me
in the other case. At any rate, I
advise the patient still to persevere in
the use of opening powders, and of the
above mixture; and to drink freely
of light vinegar-whey, or, in its
place, of any common drink, made
agreeably tartish with lemon juice. On
the sixth day, if it appears that the
fever is at a stand, and that things
go on in a promising manner, I think
it would be improper to make any
O 4 change.

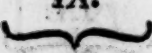
SECT. change. But if, on the other hand,
^{IX.} I perceive, that, in spite of all that
has been done, the fever increases,
and yet that no extraordinary mark of
putrefaction appears, I order another
blister; and whether I bleed, or no,
depends upon the reasons, which
weighed with me the day before.
Thus far I go, to prevent the accu-
mulation of the fizy matter; but I go
no further. In the next place, I take
care to guard against the corruption of
the humours; and as soon as I per-
ceive, that the stools become either in-
voluntary, or thin, or fetid; that
the patient grows torpid; that, in-
stead of giving a lasting relief, the
sweats help to weaken; and, above
all, that, far from healing soon, as
they always do in real inflammatory
cases, the blisters discharge a thin,
ichorous substance; in this case, I
change my course, and, in the place
of attenuating medicines, which un-
till

till then I had continued, I substitute SECT.
IX.
those, which are rather astringent. }

However, that the resolution of the
sizy matter, if any still remains, may
not be prevented, I omit the mineral
acids, which are, of all astringents,
the most powerful. Nor do I ever
make use of them at any subsequent
period of this fever, unless an extra-
ordinary resolution of the blood, and
a flaccidity of the fibres should require
it. In general, I content myself with
adding to a decoction of the bark the
spirit of mindererus, which is well
known to act, not only as a diaphore-
tick, but even as an antiseptick.
This is my receipt.

R. Corticis peruv. Pulv. unc : i. co-
que in aquæ font. unc. xii ad unc. viii.
Colat. adde spirit. Mindereri unc. ii.
syrup. croci semiunc. M. cap. cochlearia
duo amp. secundâ quâque horâ.

WHILST

SECT. IX.  WHILST the patient continues under the influence of this medicine, I attend closely to the state of his bowels. If the bark binds them, which is often the case, recourse should be had to opening powders. But if, on the contrary, a putrid diarrhoea comes on, then I follow, in every respect, the directions, which I have given towards the close of a real putrid fever. Particular attention should be given, when there appears a necessity for food, that it should consist of the acescent kind. For, though this remark may seem of little moment, I am sure, that very great evils often arise from a neglect of it.

SOME time ago a man of about thirty years of age, was seized with a fever. He was of a slender and delicate frame. On the ninth day I was requested to pay him a visit. Before I examined him, I was informed, that, previous to his confinement, he had been only

only a short time complaining; that S E C T.
IX.
in the beginning he had felt several interchanges of cold and heat; that he had been blooded three times; that he had been, in some degree, relieved by the first and second bleeding; but that he had been much oppressed by the third; that all along the crassamentum had been covered with an olive coloured pellicle; that he had taken several doses of Doctor James's powders; and that, every day, he was growing worse. From this account it was natural to deduce, that how compound soever the fever had been at first, it was, at this time, become, for the most part, if not altogether, putrid. Nor was the contrary denoted by the symptoms I observed; and of which the most decisive were, a bloated, gloomy countenance, a suffusion of the eyes, a foulness of the tongue, petechial spots, and a painful tension of the abdomen.

I judged

SECT.

IX.

I judged the time, proper for the application of blisters, to have passed; and, therefore, I only ordered a decoction of the bark with the spirit of minde-rerus; some wine-whey with nitre in it; and a few opening powders. On the eleventh night the patient slept, and sweated a good deal; and, on the following day, his pulse was more full and easy. These circumstances, if the fever had been all along of a simple nature, would have inclined me to believe, that there was now a favourable crisis. But, as I had often observed, that, notwithstanding an apparent amendment on the eleventh day, a compound fever is still apt to continue, I apprehended here the same misfortune, and the event showed, I was not mistaken. For, during the twelfth night, the patient was very hot, restless, and delirious; and, on the thirteenth day, I found him much worse. However,
I did

I did not, in the least, despair, as he SECT.
IX.
had a gentle diarrhœa, which, when
duly managed, I take to be no less
salutary in a putrid fever, than a co-
pious sweat in an inflammatory one.
I omitted then the spirit of mindere-
rus, and substituted the elixir of vi-
triol. Besides, as the patient had,
the following day, a subsultus tendi-
num, together with frequent spasms
both in his shoulders and countenance,
I ordered an ounce of musk Julep to
be given with every second dose of the
foregoing mixture. At this time there
was no need of opening powders. On
the contrary, I was obliged, in or-
der to moderate the diarrhœa, to pre-
scribe a few papers of toasted rhu-
barb, nutmeg, and alum; and cla-
ret-whey for common drink. I perse-
vered in this course, till the eigh-
teenth day, when the disorder seemed
to have taken a favourable turn.

ABOUT

SECT. ^{IX.} ABOUT the twenty second day, the fever was entirely removed; and, after having pointed out an antiseptic regimen, with a positive injunction, that it should be strictly followed, for five, or six days, I thought it no longer necessary to continue my attendance. But scarce had I taken my leave, when the patient was prevailed on to depart from all my directions. Broth, jelly, and chicken were given in abundance. By which means the fever was renewed; and, as if mischief enough had not been done, a large blister was applied to the back. The consequence was, that, on the fourth day after I had quitted him, and before the blister was taken off, the patient died.

CHAP.

CHAPTER IV.

SECT. I.

An ague, or intermittent fever.

WHEN we see a shivering, succeeded by heat, and this, in its turn, by a copious perspiration, we may be inclined to think, that the fever, which exists at the same time, is of an aguish, or intermittent kind. But yet there can be no more than a surmise. For these signs are often observed in the beginning of the fevers, which, on account of their uninterrupted progress, are ranked under the denomination of *continued*: and, therefore, to form a distinct idea, we must suspend our judgment for a while, and attend to other considerations.

What

SECT. ^{I.} What seems to me to be decisive, is, that by sweating the fever should be entirely carried off; and that, after a respite of some hours, it should return, attended with the above symptoms. I take this to be the true characteristick of agues, or intermittent fevers in general. And as to the mark, by which they are distinguished, one from the other, we find it in the difference of their periodical returns. Hence, the distinguishing names of quotidian, tertian, quartan, &c. So that we may define an ague, or intermittent fever, to be that, which comes and goes at stated times; and whose paroxysms are divided by lucid intervals.

SECT. II.

The efficient cause of an Ague.

SECT. ^{II.} **W**HEN Agues are either general, or confined to any particular place, it is very remarkable, that

that they attack those only, who are SECT:
II.
of a relaxed habit of body, or who live
upon improper food; or who digest but
badly, whatever they take for nourish-
ment. Besides, daily experience shows,
that the cure of an ague consists in
cleansing the stomach, and intestines;
and in strengthening them so, as to
make them prepare a good chyle.
Moreover, if immediately after any
one paroxysm of an Ague is ended,
you give repeated doses of such medi-
cines, as constringe the orifices of the
lacteal vessels, it is a well known fact,
that you may prevent another from be-
ing formed. And when an Ague is
stopped suddenly in this manner, it is
no less certain, that you may bring
it on again, by the means of emolli-
ent clysters, or such purges, as are
of a weakening, relaxing nature. Now,
surely, as those observations are found-
ed on truth, and cannot therefore be
disputed; we may, without any ap-
prehension

SECT. ^{II.} prehension of error, draw these inferences. First, that the efficient, or material cause of an Ague originates from the stomach, and intestines. Secondly, that it is neither putrid, nor endowed with any quality, by which it can coagulate the lymph; otherwise, the subsequent fever would be of the continued, and not of the intermittent kind. Thirdly, that it can be nothing else, than a viscid, ropy chyle, the result of imperfect digestion. Fourthly, that this slimy substance is taken up by the lacteal tubes; and that, instead of being, like a good chyle, assimilated to the rest of the humours, or immediately expelled through any of the common outlets, it sticks in the capillary vessels. And fifthly, that it continues to be accumulated there, until an obstruction is formed, sufficient to impede the freedom of circulation, to resist the action of the heart, and, of course, to occasion

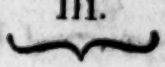
caſion a feveriſh conflict. There is a SECT.
II.
ſaying, which implies that a fever }
cures itſelf; and here it is found literal-
ly true. For, as I ſhall ſhow, by
and by, the very ſhivering, and the
rapid circulation, which comes on after,
ſubdue the viſcidty of the chyle, and
force it off by the way of perſpiration.
But, as the fountain head is not, at
the ſame time, cleared, we muſt ex-
pect, that when one paroxyſm is end-
ed, a foundation ſhould be laid for a-
nother to ſucceed it. And, as to the
difference of the periodical returns, I
think, that, without ſeeking any diſ-
tinct cauſes, we may juſtly aſcribe it
to the quantity and different viſcidty
of the chyle, which, in a given ſpace
of time, paſſes from the inteſtines in-
to the vaſcular ſyſtem. What con-
firms this point, beyond the poſſibility
of a doubt, is, that a change of air
and exerciſe, a change of diet and me-
dicines, never fail to produce a variety

SECT. ^{II.} in the appearance of all agues; and this, in proportion to the change, which these very things produce in the nature of the chyle.

SECT. III.

Symptoms.

SECT. ^{III.} **I** HAVE said, that the paroxysms of an ague are the only symptoms, by which it is distinguished; and, I may add, that they are the only ones, which require a particular attention. Let us first consider the cold fit. The symptoms, which precede this, and which mark a languid circulation, are, a low pulse, an anxiety, and lassitude. These are succeeded by obtuse pains, and when the viscid chyle is accumulated to such a degree, as almost to create a general stagnation, the patient begins to have a sensation of cold, and,
at

at last, the whole body shivers. In SECT.
this state, it is evident that the solids ^{III.} 
are braced, because they are contract-
ed; and, consequently, that they must
act with great force upon their con-
tents. Besides, the shivering itself, as
it agitates the humours, contributes
much to break their viscid cohesion.
The heart too, as it cannot, on account
of the resistance it meets with, empty
itself sufficiently, is forced to reite-
rate its contractions more quickly,
and, relatively, with greater power.
So that being pressed and turned on all
sides, the obstructing matter is subdu-
ed by degrees, and fitted to pass from
the arterial to the venal vessels. Here,
as the cold fit declines, the hot fit
begins, and the symptoms are such, as
attend a rapid circulation. The con-
sequence is, that the attenuation,
which was begun, during the cold fit,
is carried on further, during the hot.
For the exertion of the muscular fibres,

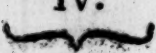
S E C T. ^{III.} which had done the work before, continues still; and besides, there is now a greater collision. In this state of hurry, and agitation, the patient remains, until the morbid chyle is subtilized so, as to be forced through the pores of the skin. But no sooner does this happen, than the symptoms begin to abate, the urine deposes a sediment, and the whole skin becomes covered with a profuse sweat. As to the quantity, and continuance, of this critical discharge, they bear, in general, a just proportion to the length, and violence, of the preceding fits; just as these do, to the quantity, and visciduity of the chyle, which causes them.

S E C T.

S E C T. IV.

Prognosticks.

IN the cold fit of an ague, the blood S E C T.
IV. may recoil so much, and the other resistances may be so great, as entirely to overpower the action of the heart. In the hot fit too, the shocks may be so rude, and the circulation so rapid, as to burst the tender vessels of the brain, or lungs. But how possible soever these events may be, it must be owned, that they happen but seldom. In this country, at least, no people die suddenly during the course of simple paroxysms. But, we have many instances to show, that agues are fatal enough in their consequences. Nor is it difficult to conceive, why they should. For, whilst they prevail, it is observeable; first, that the blood is poor, and watery, because a due tone

SECT. of the fibres, and a well-digested chyle,
IV.  which are conditions absolutely necessary to make good blood, are then wanting. Secondly, that besides the obstructions, which cause the fever, and which are removed by the force of the supervening paroxysms, others of a more obstinate nature are formed out of the road of circulation; particularly, in those places, where the vessels are weak, and little assisted by the action of the heart; and where the chyle, that passes through them, is more crude, and viscid. I mean the lacteal vessels of the abdomen, and those that go to the liver. Hence it is, that when agues are suffered to run out to a great length, or unskilfully treated, they usually terminate in a jaundice, or dropfy, and, sometimes, in both. On the other hand, when they are treated properly, experience shows, that, far from being dangerous, even in their effects, they become a
cure

cure for many an inveterate disorder. S E C T. IV.
The reason will appear clear, if we consider well the changes, which the paroxysms of an ague induce in the powers of the body.

S E C T. V.

Cure of the Paroxysms.

SOME think it necessary, not only in the cold fit of an ague to give spirituous liquors; but in the hot one to order bleeding; both which I take to be equally improper. Indeed, if the influence of heating medicines were to cease with the cold fit, and not extend to the hot, they might, perhaps, be of service in driving forward the stagnant humours, which cause the shivering. But such a speedy dissipation cannot be expected. On the contrary, we know, that the effects of spices, of tinctures, and high cordials, S E C T. V.
con-

SECT. continue a great while, and in-
^{V.}crease the heat of the succeeding fit.
To remedy this adventitious evil, one
may be forced to have recourse to the
lancet. But in no other case, should
it be thought of; because, by bleed-
ing, we weaken the stomach, and its
digestive powers, and make way for
the reception of crude, indigested
humours, which it should be our bu-
siness to evacuate. Nor is the use
of very cooling medicines much better
indicated. For, as I have noticed be-
fore, the cold and hot fits of an ague
are the only means, by which the mor-
bid chyle is fitted for expulsion; and,
therefore, to cool too much in one
case, is not less improper, than to heat
too much in the other. By both,
nature is often disturbed in her ope-
rations; and, on this account, I think
it sufficient, in the cold fit, to give,
at most, a little whitewine whey; and
in the hot fit to give twomilk whey
only,

only, or some other thin diluting drink. S E C T.
V.
The necessity of dilution is obvious. }
For the more the patient drinks, the greater the discharge by urine and perspiration will be: And the more copious these discharges are, the more the crisis will be perfect.

S E C T. VI.

How to prevent the next Paroxysm.

AS soon as the sweat ceases, it is S E C T.
VI.
usual with those who are noted }
for curing the ague suddenly, to administer medicines powerful enough to constrict the orifices of the lacteal vessels. Such are large quantities of alum, and bark, mixed with a strong infusion of chamomile, centaury and wormwood. By giving in different draughts about three pints of this mixture, I have known people to succeed in preventing the return of any paroxysm. But I know

SECT. VI. know too, that the greatest part of the patients, who did not relapse, have had no reason to rejoice at their success. For, in the place of regular fits, they have felt all the evil consequences of an ague. These unhappy sufferers ascribe their misfortune to the use of the bark; and, to prejudice their friends against it, they tell them, they have it still lodged in their bones. But the real cause lies here; that the viscid chyle had formed obstructions in different parts of the vascular system; and that these very astringent remedies, instead of resolving such obstructions, must render them still more obstinate. Besides, as this hasty cure prevents the return of any paroxysm, it takes away the only means, which nature can employ to free the body from a gross and troublesome incumbrance. If there be any who receive no injury from this mode of treatment, it is because their necessities tie them down to hard labour;

bour; and that, in such people, there S E C T.
VI.
is an exertion of the muscular fibres, by which a viscid chyle is acted upon almost in the same manner, as in the cold, or hot fit of an ague. Under such circumstances, it may, perhaps, be safe to attempt a sudden cure; but to adopt the same mode, with regard to those, who are unable, or unwilling, to labour, is to banish one disorder at the expence of bringing on another, perhaps, of a more grievous nature.

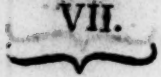
S E C T. VII.

Of a more effectual method of Cure.

FROM what has been said con- S E C T.
VII.
cerning the efficient cause of an Ague, it follows, I think, clearly, that whatever contributes to its cure, must be more or less fitted to invigorate the whole frame; and, in particular, to enable the stomach, and intestines, to perform

SECT. VII. perform good digestion. With this view, a variety of medicines may be recommended, and among the rest, some of those, which are generally reckoned empirical. But, as the bark is, of all, the most sovereign strengthener, we give it here a distinguished preference. There are, however, some conditions necessary to make this, itself, operate as a specifick. Those which reason, and experience point out, are, first, to cleanse the stomach, and intestines; and secondly, to remove the obstructions of the abdomen and liver, if any such there be. In the first case, I order a few doses of Ipecacuanha, and one or two of rhubarb. I choose these rather than drastring remedies, because they answer the necessary purpose of evacuation; and that, instead of weakening, as more powerful evacuants are wont to do, they help, ultimately, to strengthen. In the second case, I order pills made of rhubarb, soap and steel. Not but mercurial,

rial, and antimonial, preparations are SECT. VII. much better deobstruents. But then, they break down the crasis of the blood, which is already in too poor a state; and thus, if they do not bring on an additional disorder, at least, they render the cure of the ague more difficult. After all, when we come to use the bark, it may happen, that if it be given seldom, and in a small quantity, it may suffer the fever to run to a teizing, if not dangerous, length; and that if given often, and in a large dose, it may constringe the fibres too much, and produce the evils I have mentioned in the foregoing section. To obviate these inconveniencies, I know but of one way. It is, to give a moderate dose every second, or third, or fourth hour, according to the distance of the paroxysms from one another; and with each dose to mix as much rhubarb, as may procure a stool at least every twenty-four hours. More than this should not be solicited. For, by
weakening

SECT. VII.  weakening the digestive powers, too much purging would counteract the strengthening quality of any medicine. Hence, if the bark itself operates by stool, it ceases to be a specifick; inso-much that we are obliged, either to restrain its purgative quality, or to employ some other medicine in its place. But the same danger is not to be apprehended from keeping the body in the state I have directed. On the contrary, the stomach is then better able to digest whatever is taken in, either as food, or as medicine. And, as this is the only change we want to bring about, the patient ought to take care, in the mean time, not to live upon any food, but that which is easily digested: Such is stale, well-baked bread, fresh tender meat, and a certain quantity of red wine. On the same account, if he be not able to exercise between the paroxysms, he ought at least to make use of a flesh brush, and to breathe a pure air.

Nor

Nor should he desist from this course, **SECT.**
when he finds himself cured. To pre- **VII.**
vent relapses, which are more common
in this disorder, than in any other, it
would be proper, for some time, after
the paroxysms are removed, to continue
the same strengthening medicines, and
the same regimen as before.

CHAPTER. V.

SECT. I.

Of remitting Fevers.

SECT. I. **I**N a continued fever, there is no periodical aggravation of the symptoms: nor is there a fever during the time, which intervenes between the paroxysms of an ague. But in a remitting fever, we find, that the symptoms are violent at stated times; and that, when their violence is abated, a fever still continues. From this type, it appears to me, that a true remittent is not at all of a simple nature; but rather a compound of an ague,

ague, on one side; and a continued S E C T.
fever on the other. In reality, the I.
exacerbations of these fevers return at
different periods, just as the paroxysms
do in different agues, and the inter-
mediate fever has the very same marks,
which distinguish continued fevers from
one another. So that remitting fevers
may be divided into a quotidian, a ter-
tian, a quartan &c. But, with respect to
the cure, these distinctions are of lit-
tle moment. Nor do I, considering
the nature of the continued fever,
which is here an associate, know of
any useful division to be made, but
that of putrid, and inflammatory, re-
mittents.

Q 2

S E C T.

S E C T. II.

The efficient cause of remitting fevers.

S E C T.
II.

THE only efficient cause, that I have assigned for intermittent fevers, is a viscosity of the chyle; and I have shown, that continued fevers are owing, one to a coagulation of the lymph; another to a putrefactive ferment in the blood; and another to a combination of both. Now, as remitting fevers are a compound of the intermitting and continued, it follows, consequently, that their efficient cause must be a portion of viscid chyle, mixed with one or other of the three foregoing causes. Upon this principle, we may account for every change, that happens in the course of these fevers; and certain it is, that no safe method of cure can be established upon any other.

S E C T.

S E C T. III.

Cure.

SINCE remitting fevers are, of S E C T. III. all others, the most changeable and complicated, there may be room to think, that their Cure should be so likewise. But, upon a closer view, we shall find, that this is not the case. For, as in every stage of their progress, continued fevers are always dangerous, and, that agues are so in their consequences only, it is plain, that when they are both united, so as to form remittents, we should guard most against the first; and therefore, that when we discover the nature of the fever, which prevails during the remissions, we ought to treat it, as if it were solitary. That is, in some remittents, to use antiphlogistick remedies; in others, to give antisepticks;

SECT. and in others, a mixture of both,
^{III.} As to the progressive steps, that should
be taken in each of these divisions, I
need not point them out here, as they
have already been mentioned under dis-
tinct heads. After the continued fever is
removed, it is no way difficult to re-
medy the intermittent. But if, by
chance, it should continue refractory,
the best resource I know of, is a certain
quantity of pure sal ammoniac, and
bark, both mixed with a pint of strong
infusion of chamomile, centaury, and
wormwood. This I do not extol, as
a never-failing specifick. All I advance
for truth is, that, in fevers of the
intermittent kind, wherein the only
indication is to deterge and strengthen
at the same time, I have never tried
this mixture in vain.

C H A P.

CHAPTER VI.

SECT. I.

Of fevers incident to Lying-in Women.

A T every period of their pregnancy, women may be seized with any of the foregoing fevers; and whenever they are, the treatment should be almost the same, as if they were not with-child. The only difference is, that, to avoid the danger of miscarrying, neither the remedies should be so powerful, nor the evacuations so copious. In the first month, at least, when the conception is not deeply rooted, this caution is very necessary; nor is it less so, towards the last, when nature advances to a deli-

SECT. ^{I.} very. With regard to lying-in women, it is worthy of notice, that, let their fever be what it may, they should take no medicines, but under certain restrictions; such as should be observed in persons, weakened by evacuations, and a preceding labour. In the following sections, when I come to examine the fevers, which are peculiar to women in that situation, I shall have occasion to mention these restrictions still further.

SECT. II.

Of the Lochia-Fever.

SECT. ^{II.} **I**N some women, the Lochia continue a great while: In others, they cease very soon. In some, the discharge is considerable: In others, it is rather small. Nor is there a less difference in the colour. Indeed, in all

all women, there is an insensible gra-
dation, from a pure red, down to a
ferous colour. But still it is remark-
able, that this gradual change happens
in some sooner, than in others. So
that, to regulate the quantity, the
colour, or the duration of the Lochia,
we can fix no standard. This much,
however, is certain, that, notwith-
standing these differences, every thing,
relative to the evacuation itself, may
be in its natural course. But it is
far otherwise, if, by any means, the
quantity, whether great, or small,
which nature destines for expulsion,
be suddenly suppressed. We observe
then, that, besides other complaints,
a feverish motion is raised; and this
we distinguish by the name of a Lochia-
Fever.

S E C T.

S E C T. III.

*Cause of the Lochia-Fever.*S E C T.
III.

WHEN the orifices of the vessels, through which the Lochia pass, are suddenly stopped, it must necessarily follow, either that the quantity of the retained blood is so small, as to be easily derived into collateral vessels; or else, that it is so great, as to render the derivation difficult. In the first case, little or no uneasiness is perceived, because little or no disturbance is made in the order of circulation. But in the second case, as the blood cannot pass into the collateral branches, it must stagnate in the vessels of the uterus; and, by distending them, create a pain very sensibly. Nor is this all. It is the nature of every local stagnation, when considerable, to impede the circulating humours;

humours; and, by resisting the action SECT.
III.
of the heart, to force it into quicker, and, sometimes, stronger contractions. Hence arises the immediate cause of this fever. But, as to the remote, or occasional causes, I am sure they are many. Those which experience shows to be the most common, are a sudden impression of cold; a sudden surprise; or the sudden influence of any passion. Indeed, any thing, that constricts the orifices of the vessels, which open into the uterus, may be ranked under the same denomination.

SECT. IV.

Cure of a partial Suppression.

IT follows, therefore, that, to cure SECT.
IV.
this fever, the only thing to be done, is, to remove the stagnation, which causes it. But to attain this point, we must change our course, according

SECT. ^{IV.} cording as the degree of suppression appears to be different. When there is only a sudden diminution of the Lochia, it is a common practice to make the patient take an opiate; to bleed her in the foot; to apply warm cloths to the vagina, and the region of the uterus; to order some light drink, and, now and then, a small quantity of the tincture of castor; or of any volatile alkaline salt, mixed with any of the common vehicles. These means are employed, not only to relax the vessels of the uterus, and to quicken the circulation; but also to thin the humours. And certainly, if these effects be once produced, to a certain degree, the discharge of the Lochia cannot but be sufficiently abundant.

SECT.

S E C T. V.

How to remedy a total Suppression.

IF the foregoing method fails of S E C T. V. success, it is because it is adopted, when there is a total suppression. But that is the very time, when it should not at all be tried, because the constriction is then too great, to be taken off by any medicines; and that every attempt to force forward an insurmountable obstacle, serves only to inflame the part, by occasioning a greater degree of fulness. In this case, the only eligible course is, that of derivation. By which I mean, to prevent a further plenitude, to draw the blood, which overcharges the uterus, into the collateral branches, and then to expel it through different outlets, since by stagnation it has been rendered unfit to be retained. Now,
to

SECT. ^{V.} to answer these purposes, it is evident,
 { that the patient should be bled in
 the arm, to a greater, or lesser quantity; according as the complaint is more, or less, violent: that her body should be kept gently open: and that the discharges by stool and urine should be promoted largely at the same time; not indeed by heating medicines; but by such as are usually given in a state of inflammation. All these means cooperate with one another, as they tend, each of them, to lessen the quantity of the humours; without which it is impossible to disencumber the vessels of the uterus.

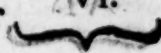
SECT. VI.

Inflammation of the Uterus.

SECT. ^{VI.} **B**UT suppose no assistance to be
 { given, until it appear plainly
 from great heat, great pain, great tension,

sion, and great fever, that the uterus SECT. VI. is actually inflamed, what plan is then to be adopted? Without any loss of time, I would have the patient bled in the arm; not, indeed, ad delirium, as I have recommended in a raging inflammatory fever. Such a practice is forbidden here, by the lowness of the pulse; and, particularly, by the weakness, which is ever attendant on delivery. But these considerations should not deter us from having frequent recourse to a small bleeding. What the number should be, I shall not determine, as it must necessarily vary, according to the violence of the inflammation, and the constitution of the patient. In general, however, the custom is, during the first two days, to bleed, every seventh, or eighth hour; and, at each time, to draw from seven to ten ounces. Next to this, the most necessary step to be taken is, to keep the body gently

SECT. VI. gently open, by the means of manna, or some other mild laxative medicine: to give nitre, in order to promote the discharge of urine, and the spirit of mindererus, to forward that of perspiration. To administer those means, in due time, and in due proportion, is all that would be requisite, along with plenty of diluting drink, were the inflammation owing, singly, to the globular part of the blood. But this is very rarely the case. For how fluid soever the lymph may be, when first the inflammation is formed, it becomes fizy at last, partly by stagnation, and partly by the heat of the place affected. It is this fize, that adds not only to the height of the inflammation, but even to the difficulty of removing it; because it is much harder to create a fluidity in coagulated lymph, than in a crassamentum of blood; and that, without a certain degree of fluidity, no resolution can ever be obtained. As soon

soon, therefore, as we discover, ei- S E C T.
ther from the buff-like appearance of ^{VI.} 
the blood, or even from the obstinacy
of the complaint, that this change is
wrought in the lymph, we ought no
longer to depend, solely, upon the a-
bove expedients, but to take in some
assistants of a more attenuating nature.
Such, for instance, are antimonials,
and blisters. With regard to opiates,
which some people are fond of giving,
as well in this, as in every other in-
flammation, I do not think, that their
use is quite so proper. My reason is,
that opiates of every kind have no
power at all either to empty, or to
attenuate, and that by lessening the
pain, and other symptoms, they de-
prive us of the only guide we can
have. For it is certain, that, if you
except the violence of the disorder it-
self, we can have no other standard,
by which to estimate the necessity of
either bleeding, or blisters, or attenu-
R ants,

SECT. VI. *ants, or evacuating medicines: And*
it is no less certain, that the cure
of every inflammation depends entirely
upon a proper regulation of all
these means.

SECT. VII.

Concerning an Abscess of the Uterus.

SECT. VII. *WHEN* a resolution appears, the
greatest care should be taken
to perfect it. Otherwise, a part of the
obstructing matter may still remain;
and, though it should not be in such a
quantity, as to keep up the fever, yet
it may be great enough to lay the founda-
tion of a scirrhus tumour. In glan-
dular substances, a change of this sort
is very common; and, when once a scirr-
hus is formed, we all know, that a
cancer may follow. But, if there be
no resolution at all, the inflammation
must terminate in an abscess, or gan-
grene.

grene. The difficulty is, to determine, S E C T.
VII.
when either begins to prevail. At any
time, from the sixth to the twelfth day,
if there be a sudden aggravation of the
symptoms, we believe generally, that it
is a prelude to the formation of matter.
But, as the same alarm often precedes
a resolution, whether perfect or not, it
is plain, that it cannot be altogether a
sure sign of a commencing suppuration.
A short time, however, is sufficient to
clear up the doubt. For instance, if
this great effort of nature be exerted at
the approach of night, and that it tends
to a resolution, that very night the pa-
tient will have a critical sweat, or a
great discharge of muddy urine, or,
perhaps, both; and the morning follow-
ing, the inflammation will be found
greatly on the decline. Whereas, if
no such discovery be made, we may
rest assured, that an abscess is begin-
ning; and, in this case, the hurry must
be not only great, but of some continu-
ance.

SECT. VII.
ance.

For in the act of suppuration, it is not alone the nature of the obstructing substance, that must be changed: A part also of the obstructed vessels must be separated from the rest; and the whole beaten into a smooth, homogeneous mass. This certainly requires time; and when it is finished, the impulses of the neighbouring fluids, and the oscillations of the vessels, by which alone the work had been done, begin to abate; and then, of course, the patient receives some respite from pain. But the truce is short, and, for the most part, deceitful. A new scene follows; and, though not so painful, as the first, is yet no less dangerous in its consequences. For, if the abscess be situated where no instrument can reach, the matter must be absorbed, and the effect is a changeable fever. The reason is clear. In every abscess that succeeds an inflammation, the pus is at first oily, and viscid; but, by being long inclosed,

closed, it becomes thin and acrid. So S E C T.
VII.
that, though the first feverish attacks, which are caused by its absorption, should resemble those of the remitting kind, and manifest themselves only by shiverings, they at last become like those, which are truly putrid. Under this type, the fever runs on, until the abscess bursts, and an ulcer be formed. Nor does it even then alter its character, unless an outlet be made for the purulent matter to pass through; because, without this, there must be the same absorption, as before, if not still greater.

S E C T. VIII.

How to treat an abscess of the Uterus.

IT requires no proof to show, that S E C T.
VIII.
we have much more to fear from a great, than from a small abscess. Therefore, as its size depends upon the ex-

SECT. tent of the inflammation, and that this
VIII. continues to spread, until the obstruction, which causes it, be converted into matter, it follows, that, upon perceiving the unavoidable necessity of a suppuration, we should neglect no means to hasten it. Nothing ripens an inflammatory tumour more, than warm poultices. This power is certainly owing to their relaxing quality. And hence it is, that where we cannot apply them, as in all inward tumours we surely cannot, we should have recourse to such other expedients, as are any way fitted to produce a relaxation. Upon this principle, bleeding and opiates are recommended justly, and so are emollient glisters; emollient injections into the vagina; emollient fomentations on the region of the pubis. Nor should we depart from this course, until an abatement of the former symptoms, and a succession of frequent shiverings denote, that the abscess is brought to a sufficient

sufficient degree of maturity. But when SECT. VIII. this point is once gained, I think it would be improper to wait, until the matter make way for itself. For before this could happen, it might diffuse itself along the cellular membrane, and form sinusses of various kinds. Moreover, as it is by corroding the point of the abscess, that purulent matter can give itself a vent, it is obvious, that the degree of acrimony, which is sufficient to effect this, is likewise sufficient to destroy the parts, which must be exposed to it after. Which is the reason, that the worst of ulcerations are often made, when an abscess, full of acrid matter, opens in any point of the uterus. The only way to lessen these evils is, if possible, to burst the abscess in time: And where no instrument can reach, we must depend upon the force of sternutatories, pukes, and acrid glisters. By raising a convulsive motion, these remedies give a shock, and no-
R 4 thing

SECT. VIII. thing but a shock can break an inward abscess. Thus far, if we can succeed, and that the extravasated matter can find no direct issue, our next care should be to have it absorbed, and then to force it off through the natural outlets. But that there may not be a constant supply of matter, we should strive to heal the ulcer; and for this purpose, we should adopt a method, which until then would be, I think, rather hurtful. What I mean is, to blend evacuants with strengtheners, and, above all, to use the decoction of bark, acidulated with the elixir of vitriol. The reason is, that an absorption of matter corrupts the humours, and that, whilst they are in a bad state, every attempt to heal any ulcer is fruitless.

SECT.

S E C T. IX.

Gangrene.

HE who understands the principle, S E C T. IX.
on which a resolution, or even
a suppuration, is brought on, need not
be at a loss to know, what it is, that
constitutes a Gangrene. It is certain,
that a strong oscillation of all the ves-
sels, which compose the affected part,
is necessary to complete a resolution;
and, that to favour a suppuration, it is
sufficient, that some of them should
vibrate to such a degree, as to concur
with the successive impulses of the hu-
mours, in gently separating the obstruct-
ed ends of the capillary vessels, and in
converting the whole of what is thus
loosened into a smooth, balsamick mat-
ter. But, that either of these effects
may be produced, the substance, which
distends the vessels, must be small, or,
if

SECT. if great, it must be considerably lessened.

IX.

ed. Otherwise, we can readily conceive, that their play would be, in a great measure, clogged, if not entirely impeded. For the nature of all elastick fibres is such, that, by being too much distended, they lose their tone, and consequently the power of driving backwards, or forwards, the humours, which they contain. Then it is, that they begin to mortify, and the beginning of this state is, what we call a gangrene. But when this is confirmed, that is, when it spreads far and deep, we give it the name of a sphacelus. There is another difference well worthy of being noticed. In a simple gangrene, the parts still retain some life; because the distension of the vessels is not at once carried to such a degree, as totally to destroy their oscillations: Whereas in a sphacelus, all sensibility, and motion are irretrievably lost; because the vessels are rendered absolutely inactive.

tive. When nature is able to disengage herself, she forms an inflammatory circle round the sphacelated part; and thus, by stretching the sound vessels in every point of their circumference, she drags them, as it were, from the corrupted ones, which before adhered to them. A contrivance of this sort is never made, but when the rest of the humours are in a good condition; nor can we expect any benefit from it, but when it is external. For, to what purpose is it to separate, if no outlet can be made for that, which is separated, to pass through? And what way is possible to be made, when a sphacelus is formed in the interior parts of the body? Indeed, if it were confined to the inside of the uterus, there may, perhaps, be a chance; because there may be then a possibility of discharging it. But, situated on the side, which faces the cavity of the abdomen, we may justly pronounce a sphacelus mortal, whether it be detached,

SECT. IX. ed, or not; because, in either case, it must prove an irremediable source of corruption. The prognostick is somewhat different, with regard to a gangrene. Not, indeed, that the prospect is favourable. But yet, as the affected parts preserve some life, we should not altogether despair of increasing it. Many instances show, that the beginning of a gangrene is curable, and, therefore, since this is the only point of time, when medicines can have the least possible appearance of success, it is of great moment to know, when an inflammation begins to take such a turn. The colour of the skin may inform us, when the complaint is external. But as, in the present case, we can have no such guide, we must receive our information from other symptoms; nor can we be mistaken, if we attend to them properly. Those which I mean, are, the heat, the pain, the tension, the fever, and the other symptoms, which attend

attend an high inflammation. If, from SECT.
IX.
being violent to an extreme, these symptoms become suddenly so mild, as to be scarcely felt, and this, without any discharge, or critical eruption, we need no further proof, that the vessels begin to lose their tone; or, in other words, that a gangrene begins to be formed. For, to what other cause can so sudden a calm be ascribed? Not to a resolution, which is ever gradual, and which is always preceded, or, at least, attended by a discharge, or eruption, of some kind or other: Neither can it be owing to a suppuration; because it is a great deal more sudden, and at the same time greater, than it is possible for it to be, when an inflammatory tumour begins to suppurate. Besides, in either of these cases, the pulse still retains some force, and the countenance appears, for a good while, florid. Whereas, when this insidious case is perceived, the pulse sinks, the features become pale, languid,

SECT. IX. languid, dusky : and if no immediate relief be given, the patient dies away, at a time, when the standers-by may think her better.

SECT. X.

Cure.

SECT. X. **I**N the present case, there can be no doubt concerning the indication of Cure. The distension, which causes the gangrene, must be removed ; but to fulfil this indication is very difficult. On one side, the patient thinks herself a great deal better ; those about her think so too ; and, whatever may be done, the success is very uncertain. Under these circumstances, it may seem too hazardous to insist upon the drawing of any blood. But then it should not be forgotten, that a sphacelus will surely come on, if the vessels be not speedily disengaged ;

ged; and what can disengage so effectually, as bleeding? I do not mean, ^{SECT. X.} however, that a great deal should be drawn at any one time, nor that a small bleeding should be repeated often. There is a medium, which is always the safest to be followed; and the more so, in this case, as the want of much bleeding can be supplied by deobstruents, and evacuating medicines. Among these, no one is, in my opinion, equal to calomel. The necessity for its operation is clearly pointed out here; and the fever, which always forbids it, is now wanting. Therefore, as no time is to be lost, I would recommend three grains to be given two or three times a day; and, to quicken its manner of operating, I would have it mixed with some laxative medicine. That which I prefer is a solution of manna, and rochel salts, or some lenitive electuary: and I choose these the rather, as they produce a degree of relaxation, a thing surely necessary,

SECT. ^{X.} necessary, where we wish to lessen too great a distension. It is also on this principle, that opiates are recommended by many, and that I think them useful. The best way of giving them is, along with some cordial medicine. For, though opiates alone raise the pulse; yet so great is the depression here, that they cannot do it sufficiently. If, for two or three days, the patient do not become worse, there is reason to hope, that the progress of the gangrene is checked; and then I think it advisable, not only to lessen the quantity of calomel; but also to add some bark to the little, which is still proper to be continued. By the joint force of these medicines, we may come to banish, what we have to fear from putrefaction on one side, and distension on the other. But no sooner is this last removed, than we should entirely change our method. For as the vessels, which have been distended,

ed, cannot all be restored to their primitive tone, some of them must necessarily decay; and what would fall off in the form of a crust, or dry scale, were the complaint external, is softened into a putrid fancies by the moisture of the body. The treatment then should be the same, as that, which we use in the beginning, and during the course, of another sort of gangrene. I mean that, which originates from too great a relaxation of the vessels, or from an acrimony, that corrodes them, or from a combination of both. On the decline of a putrid fever, if the patients have long lain upon their back, and that proper care has not been taken, to keep them clean, they become very subject to a gangrene of this kind. The like happens in many other cases, and then the plan, which reason and experience show to be the most eligible, is, to give bracing antisepticks. Such is a
S composition

SECT.

X.

SECT. composition of the bark, and some
^{X.}
mineral acid. The same rule holds
good with regard to outward applicati-
ons. Emollient ones are undoubtedly
best, when the gangrene arises from
too great a distension of the vessels :
whereas, in every other case, those
that are fit to brace and stimulate,
are certainly preferable.

CHAP.

CHAPTER VII,

SECT. I.

Of the Milk-Fever.

IN a new-born infant, it is necessary, that the blood should take a new turn; and that his lungs should be expanded. It is necessary too, that the mother should recover from the hurry, and fatigue, of her preceding labour. To answer these purposes, nothing can be so proper, as the rest, into which they both fall. From hence, as soon as the child awakes, he, instinctively, gives notice of his wants; and nature takes care to make for him an early provision. At first, indeed, very little food is requisite, because the infant is not

SECT. then well able to suck, or even to
I. swallow. Moreover, as the intestinal
tube is yet loaded, his first aliment
should be somewhat purgative. It is
for these reasons, that the discharge of
the lochia lessens the secretion of milk
in the breasts of every lying-in wo-
man; and, that for some time after deli-
very, nothing more remains to be
sucked, than what is of an opening
quality. But, as soon as the meco-
nium is removed, and that the child
stands in need of more substantial
nourishment, we may observe a cor-
responding change in the frame of the
mother. For, as the uterus then
contracts itself, the lochia begin to
grow less; and in proportion to their
decrease, the breasts again begin to
swell. Thus it comes to pass, very
providentially, that, as the wants in-
crease on one side, the means increase
on the other; and, while this order
is maintained, the mother and child
thrive

thrive together. But the reverse hap-
pens to both, if, on account of a de-
fect in either; or, what is more
common, of some preposterous notion
of those about them, the milk should
not be drawn from the breasts, in
proportion to the quantity of humours,
that flow thither for its secretion.
In this case, the mother must feel a
fulness attended with pain; and, if
no proper vent be given, we give the
name of a milk-fever to that, which
must necessarily follow.

S E C T. II.

Cure.

IT is evident, then, that, to cure
a milk-fever, we must remove
the congestion, which causes it. The
most natural way is through the nip-
ples. But it must be observed, that
when once the fever is kindled, it

SECT. II. disturbs the secretion, and that by causing a tension in the vessels of the breasts, it renders a discharge through them more difficult. It is necessary, therefore, to soften these parts by the means of warm, emollient applications; and then, at proper intervals, to draw with a glass, made designedly for the purpose, as much milk, as can come off readily. If the discharge be considerable, it rarely happens, that any other is requisite. But, if it should not be so, it is much to be apprehended, that, by delay, and the heat of the fever, the milk may be curdled; that the grumous parts of it may be accumulated in the vessels of the breasts; and that, by distending them to a great degree, it may bring on an inflammation with all its consequences. To prevent these evils, we should, in time, solicit other discharges. That of the lochia seems to be the most effectual, as there is between the uterus and breasts an immediate

ate

ate connexion ; and, therefore, if any ^{SECT.} show still remain, it should be increased, ^{II.} by bathing the woman's feet, by applying warm cloths to the region of the pubis, and giving her plenty of warm diluting drink. Nor is this the only resource. Upon this occasion nature has many. In reality, when the evacuations through the nipples, and uterus, are rather small, or insufficient to remove the fever, we may observe, that a gentle diarrhœa, or a plentiful perspiration comes on. They are both critical, infomuch, that we should encourage the one by means of a little manna, and the other, by giving, now and then, some saline draughts ; or, what is much better, a mixture of some opiate, the spirit of mindereus, some camphire, and any of the common vehicles. Should the camphire prove disagreeable, as it sometimes does, the other ingredients might be given successfully without it. The quan-

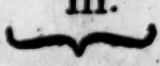
SECT. II. tity of milky, or ferous substance,
II. which passes then through the pores
of the skin, is so great, that it protrudes the ducts of the miliary glands: and this I take to be the reason, why the sweats, which break forth in this fever, are, for the most part, attended with a miliary eruption. The appearance is certainly favourable, because it denotes an aptitude in the morbid matter to be carried off by sweats, and a power in the frame to expel it that way. So that, if it should go off before the disorder be entirely removed, we have reason to expect a change for the worse; not so much on account of what falls in, as because that which should have been driven out is still retained. In this case it would seem reasonable, to substitute some other evacuation; and nature alone often does it, as we may see by the diarrhoea, which frequently succeeds a suppressed perspiration.
But

But if, instead of abating, the fever S E C T.
should still increase, the sweats must II.
be raised again; and to succeed in
this point, it is necessary to know,
what it is, that first stopped them.
There are, in general, four causes:
The impression of external cold; the
influence of any coagulating drink, or
of improper food; too languid a pulse;
or too rapid a circulation. The rule
is, to lessen whichever of these causes
prevails; and then to establish the
same degree of heat and motion, as
when the eruption first appeared. By
this means, the fever begins to decline,
and the vessels of the breasts, like
those of the uterus, contract so, as to
preclude the humours, by which they
had been at first distended.

S E C T. III.

*Consequences of the Milk-Fever.*S E C T.
III.

IT frequently happens, when the Milk-fever is neglected, or but badly treated, that the breasts become inflamed, just as the uterus does, when proper care is not taken of a suppression of the lochia. And, though the resources are more numerous here, than when the uterus alone is concerned, yet it is certain, that the danger is very pressing. For, the very stagnation, which inflames the breasts, is sufficient to coagulate, not the milk only, but the lymph, or serum, of the blood; and when once this is in a coagulated state, the inward parts must necessarily suffer: of which, as soon as we are apprised, we should have recourse to bleeding, and even to blisters. As to the repetition of these

these expedients, it must be regulated SECT.
III.
by the appearance of the blood, and 
the violence of the symptoms. But if
the breasts alone be engaged, there is
no need of using so severe a treatment;
because, though the external inflam-
mation should not be resolved by mild
antiphlogistick remedies, we can easily
guard against the danger of its conse-
quences. I need not mention the par-
ticular steps, that should be taken,
relative to a suppuration, and gangrene,
as they are sufficiently known already.
And, as to the scirrhus tumour, and
cancer, which may be formed here, as
well as in the uterus, they are of the
chronical kind, and should not, there-
fore, be placed in the class of acute
disorders.

CHAPTER VIII.

SECT. I.

*Of the puerperal Fever.*SECT.
I.

WHEN a lying-in woman is seized with a great shivering, acute pain, and a considerable tension, in the lower part of the abdomen, we may think, that the uterus is affected; and in this opinion we may be confirmed, if there be, at the same time, a suppression of the lochia. But if we have not this sign to be guided by, we have just reason to suspect, that the complaint is seated elsewhere. In reality, upon dissecting those, who have died of the fever, ushered in by the above symptoms, it has been discovered fully, that the omentum, and

and the parts of the intestines, which S E C T.
I.
lie contiguous to the uterus, have been
alone inflamed. From hence it has
been judged proper, to call the disorder by the name of the *puerperal* Fever; not because it is, in its own nature, different from any of the inflammations, with which it may be confounded; but because it is the effect, partly of pregnancy, and partly of the changes, which happen in the frame in some time after delivery.

S E C T. II.

Efficient Cause.

S E C T.
II.
DURING the time of pregnancy, especially towards the end, it is well known, that the uterus is greatly distended; and that by pressing, as well against the omentum, as upon the subjacent intestines, it prevents an even distribution of the fluids.

SECT. II. fluids. This is the reason of what
women with child often complain of,
a costive habit of body; a numbness,
and œdematous swelling in the lower
parts, together with a disagreeable sen-
sation of fulness in the upper. Keep-
ing the body open, though certainly of
service, does not relieve these com-
plaints so much, as bleeding in the
arm: and it is remarkable, that the
blood, which is then drawn, is, for
the most part, fizy. Indeed, the se-
rum is always so, when it is made
to stagnate; and where there is so
great a pressure, as in the case now
before us, there certainly must be a
stagnation, more or less. One would
imagine, that this should make preg-
nant women be more subject to in-
flammatory fevers, than they usually
are; and, no doubt, they would be
so, but for the timely precautions they
use. The bleeding, and opening me-
dicines, which they are forced, at pro-
per

per intervals, to have recourse to, lest SECT.
II.
sen the inflammatory size, and, of course, hinder it from kindling into a flame. We must not, however, expect, that it can be entirely expelled, until the pressure, which first caused it, be removed; that is, until the uterus cease to be distended. Then, indeed, the action of the body, aided by the discharge of the lochia, is sufficient, in general, to attenuate what may still remain sily in the lymph, and to force it off through different outlets; particularly, through the cuticular glands. In fact, we observe, that, after delivery, all women have a moisture upon their skin; and that, in some of them, the perspiration is so great, as to occasion a miliary eruption. But what by a weakness in the vessels, and what by an abundance of the inflammatory size, it frequently happens, that there cannot be a thorough depuration; and, in this case, those
parts

SECT. ^{II.} parts must be exposed most, which are, relatively, the weakest. Now, whatever may be, at other times, the strength both of the omentum, and the adjacent parts of the intestines, we cannot doubt, considering what they must have suffered from the gravid uterus, but that, after delivery, their vessels have less tonick force, than any other part of the body; and, consequently, that they have less power to propel forward, or to act upon, what they contain. Add to this, that they receive now more fluids, than when the pressure remained, and you will easily perceive, why the fizy blood should be accumulated in them to such a degree, as to bring on the inflammation, which I take to be the efficient cause of the puerperal fever.

SECT.

S E C T. III.

Cure,

AS bleeding, blisters, and cool, eva- S E C T.
cuating medicines, are the ^{III.} }
means, which experience shows to be the
most successful in the cure of every in-
flammation, it follows, from what has
been said, that they are clearly indicat-
ed here. And, indeed, to proportion
them to the violence of the symptoms,
is all that would be necessary, were the
symptoms themselves to retain always
the same tenor. But this is rarely the
case. For, how inflammatory soever
the fever may be at first, it becomes
somewhat putrid at last; and as its na-
ture changes, the concomitant symptoms
change along with it. Hence arises
the necessity of a mixed treatment;
which I need not dwell upon here, as
it has been, I hope, fully explained in
T the

SECT. the chapter, relating to the compound
III. fever. It has been affirmed, I know, that both bleeding and blisters are pernicious in this fever, and I readily allow them to be so, towards the end, when a general prostration of strength, a putrid diarrhoea, an inexpressible anxiety, bilious vomiting, a scorching heat, profuse sweats, and petechial eruptions, plainly denote, that the fever has assumed a putrid character. But I am far from being of the same opinion, if recourse be had to them in the beginning, when the fever sets in with a shivering, when the pain, the heat, the tension, are mostly circumscribed; and prove, therefore, beyond the possibility of a doubt, that the fever is then of the inflammatory kind. In these circumstances, if they who ascribe them to a putrefaction of the humours, were to give the bark, I believe they would have reason to correct their mistake. For what else than a mistake is it, to infer,

infer, as they do, that the fever has SECT.
III.
been all along of the putrid kind, merely because some patients recover, without any other assistance, than what they receive from saline draughts, and cool, evacuating medicines? It is well known, that these remedies are mild attenuants, as well as mild antisepticks; and, therefore, that they may be given, with safety, in all doubtful cases. Nay, where it is admitted on all hands, that nothing else, than an inflammatory disposition prevails, it may be sufficient to administer these very medicines, provided the symptoms be no way considerable. But, surely, when the danger is great, we must give more powerful attenuants in inflammatory cases, and more powerful antisepticks in those, that are putrid.

F I N I S.

infer, as they do, that the fever has not been all along of the putrid kind, more, because some patients recover, without any other assistance, than what they receive from saline draughts, and cool evacuating medicines: It is well known, that these remedies would be attended with

E R R A T A.

Page 29, line 8, for inconceivable read inconceivable.

Page 58, line 12, for irresistable read irresistible.

Page 105, line 8, for stifness read stiffness.

Page 140, line 3, for teizing read teasing.

Page 150, line 15, for tranquility read tranquillity.

Page 171, line 5, for Camphorcæ read Camphoræ.

Page 180, line 5, for diarrhæa read diarrhœa.

Page 185, line 4, dele be-

Page 215, line 20, for observeable read observable.